

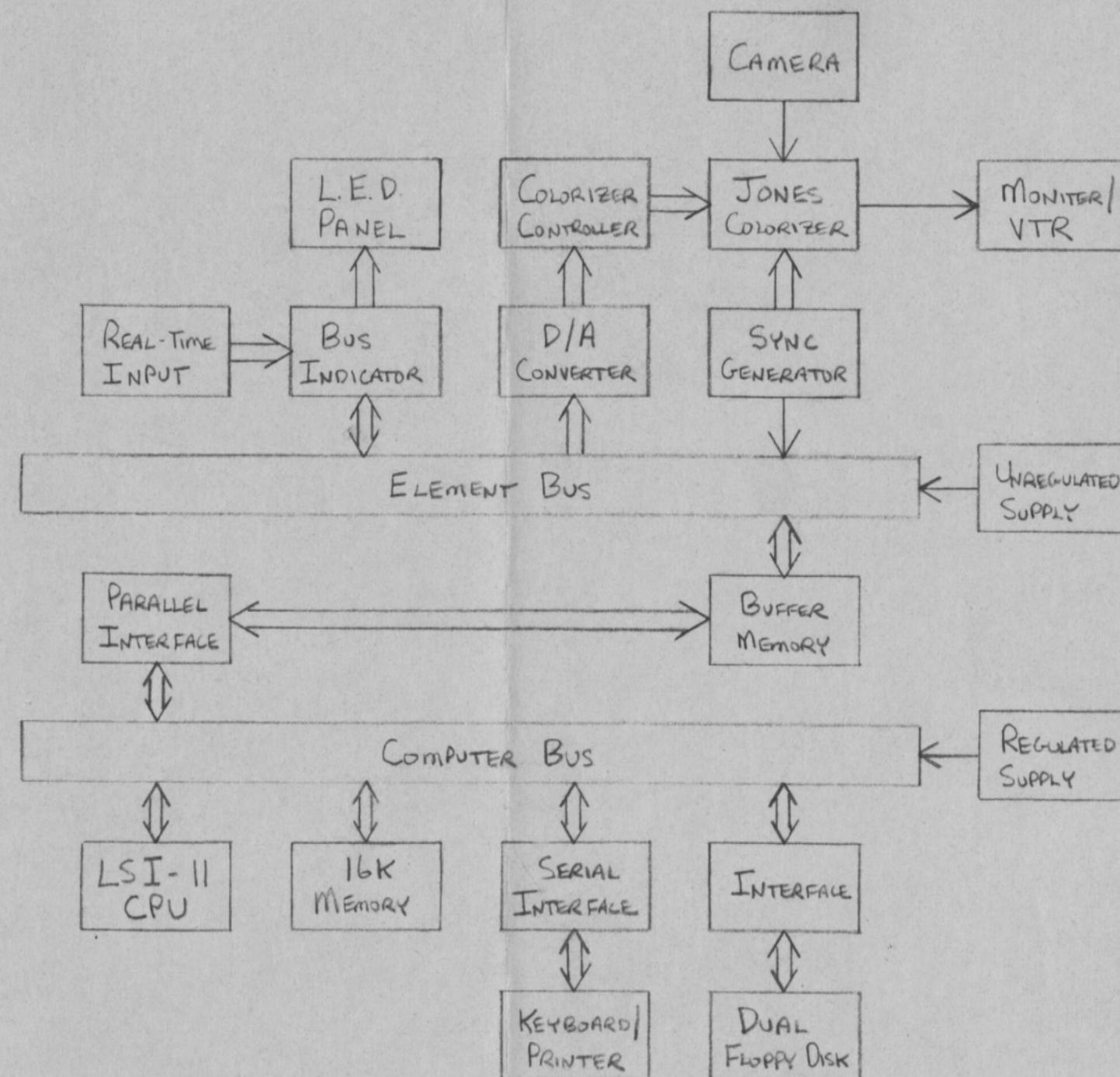
EXPERIMENTAL TV CENTER, LTD.

BINGHAMTON, N.Y.

COMPUTER - BASED

PROCESSING VIDEO SYNTHESIZER

SYSTEM DIAGRAM, 9/77 R.B.



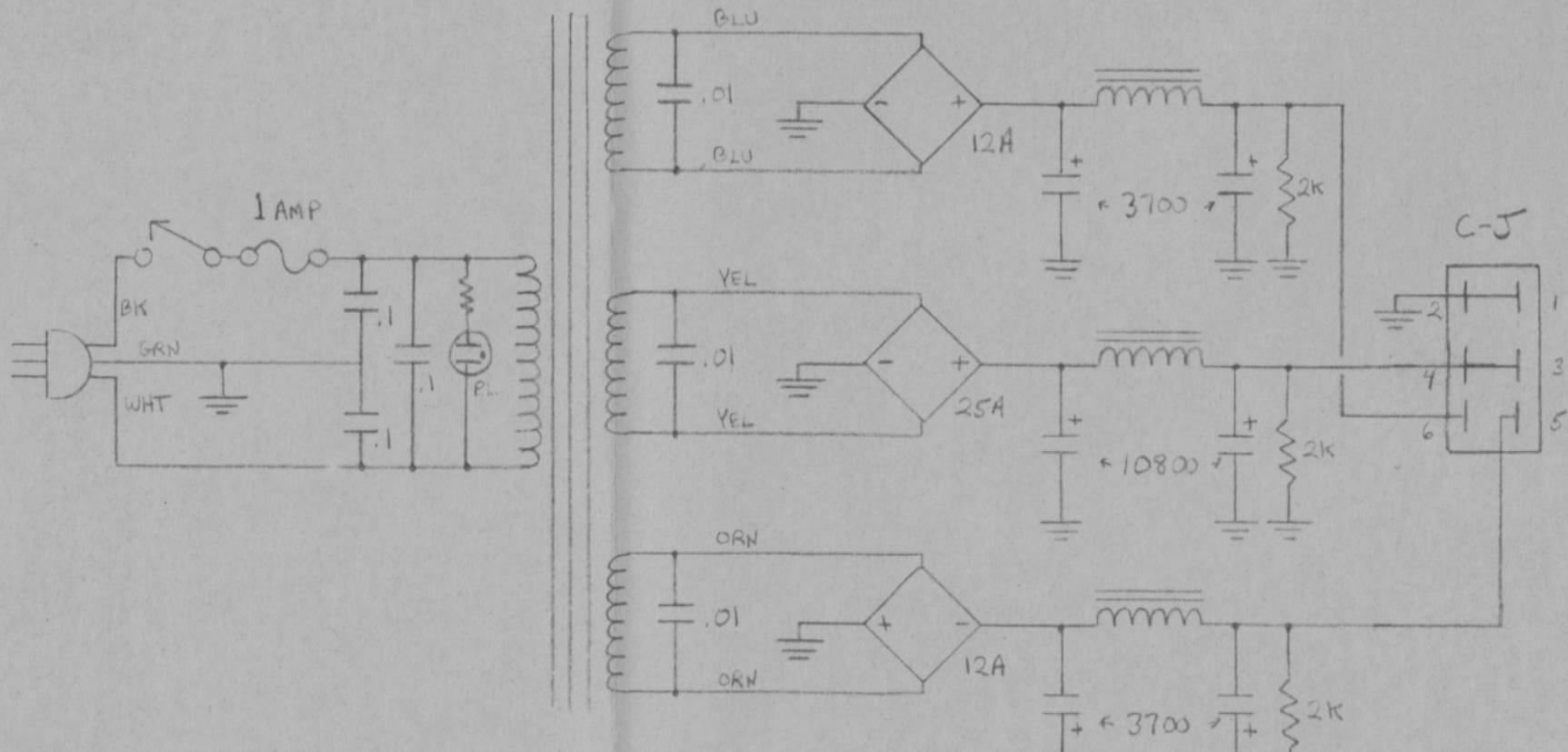
EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT
ELEMENT BUSS POWER SUPPLY
6/77 RICH BREWSTER
PAGE 1 OF 1

PARTS LIST :

- TRANSFORMER - BASLER BE12696-001
- 2 BRIDGE RECTIFIERS 200 PIV 12Amp
- 1 BRIDGE RECTIFIER 400 PIV 25Amp
- 3 CHOKES, 20 Amp, $\leq .05$ ohm
- 4 CAPACITORS, 3700 MFD AT 75V
- 2 CAPACITORS, 10800 MFD AT 20V
- 3 RESISTORS, 2000 ohm 1/2 WATT
- 1 FUSEHOLDER w/ 1AMP SLO-BLO FUSE
- 3 CAPACITORS, .01 MFD 100V MYLAR
- 3 CAPACITORS, .1 MFD 600V
- 1 NEON PILOT LAMP ASSEMBLY
- 1 S.P.S.T. TOGGLE SWITCH, 6Amp 120V
- 1 LINE CORD, 3 WIRE, 120V
- 1 CINCH-JONES CONNECTOR, 6 PIN,
CHASSIS MOUNTED FEMALE
- 1 ALUMINUM CHASSIS 3" x 7" x 15"

CABLE PARTS :

- 1 C-J MALE, CABLE MOUNT, 6 PIN
- 1 C-J FEMALE, CABLE MOUNT, 6 PIN
- 10' 7-CONDUCTOR, 18 GAUGE CABLE



CONNECTOR, CABLE, VOLTAGE, CURRENT

1, 2	BLK, GRN, BRN	GND	
3, 4	WHT, RED	+9V	6A
5	BLU	-19V	2A
6	ORN	+19V	2A

* NOTE - THESE ARE THE CABLE COLORS, NOT
THE TRANSFORMER LEADS WHICH HAPPEN TO
BE THE OPPOSITE COLORS.

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT 9/77 R.B.
BUFFER MEMORY, PAGE 2 OF 3

PARTS LIST:

1	VECTOR 8800V UNIVERSAL 100-PIN PLUGBOARD
38	16-PIN DIP WIRE WRAP SOCKETS
10	14-PIN " " " "
1	24-PIN " " " "
4	HEAT SINKS
1	BERG H-854 40-PIN CONNECTOR
2	Lm1340T-5 REGULATOR
4	SN7400N QUAD 2-INPUT NAND
2	SN7402N QUAD 2-INPUT NOR
✓1	SN7404N HEX INVERTER
✓1	SN74\$04N SCHOTTKY HEX INVERTER
✓1	SN7430N 8-INPUT NAND
✓1	SN7474N DUAL D FLIP FLOP
✓1	SN74154N 4-LINE TO 16 LINE DECODER
✓1	SN74157N QUAD 2:1 DATA SELECTOR
✓1	SN74161N ASYNCHRONOUS 4-BIT COUNTER
✓1	DM8097N TRI-STATE HEX BUFFER
✓1	N8T97N HIGH-SPEED TRI-STATE HEX BUFFER
✓1	DM8160N 6-BIT COMPARATOR
✓1	21L02 LOW POWER 1024x1 STATIC RAM
2	22uf 25V ELECTROLYTIC CAPACITORS
2	10uf 50V " "
12	.1uf 35V TANTALUM "
1	.01uf 100V MYLAR "
1	.002uf " DISK "
1	.001uf " " "
1	330pf " SILVER MICA "
2	51 ohm 1/4 WATT RESISTORS
3	100 ohm " "
3	1K " "
3	10K " "

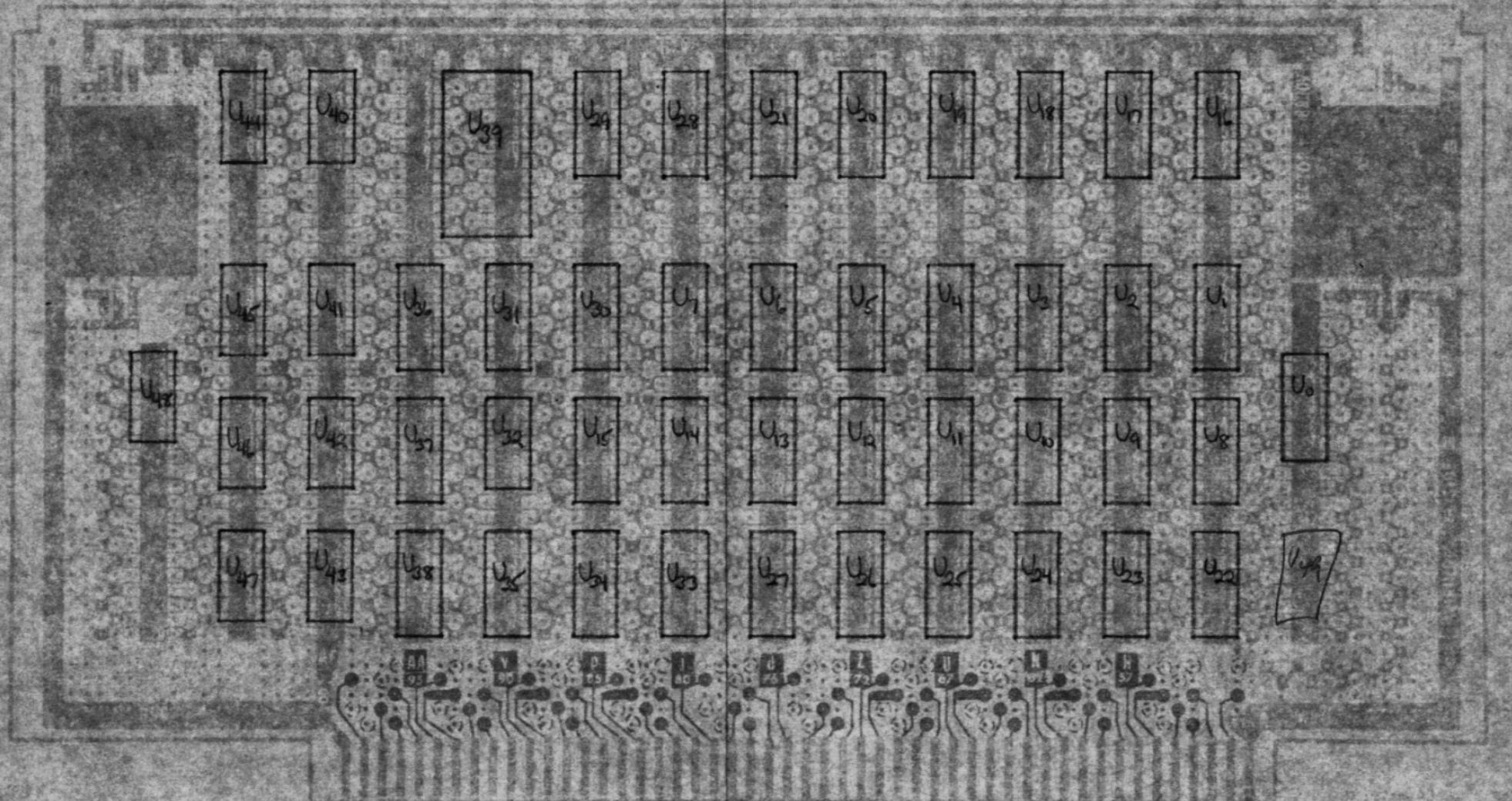
POWER CONSUMPTION:

+9VDC @

NUMBER	CHIP	LOCATION	V _{CC} PIN	GND PIN
U ₀	21L02	BCZ	10	9
U ₁	21L02	CY	10	9
U ₂	21L02	CX	10	9
U ₃	21L02	CW	10	9
U ₄	21L02	CV	10	9
U ₅	21L02	CT	10	9
U ₆	21L02	CS	10	9
U ₇	21L02	CR	10	9
U ₈	21L02	BX	10	9
U ₉	21L02	BX	10	9
U ₁₀	21L02	BW	10	9
U ₁₁	21L02	BV	10	9
U ₁₂	21L02	BT	10	9
U ₁₃	21L02	BS	10	9
U ₁₄	21L02	BR	10	9
U ₁₅	21L02	BP	10	9
U ₁₆	8097	DY	16	8
U ₁₇	8097	DX	16	8
U ₁₈	8097	DW	16	8
U ₁₉	8T97	DV	16	8
U ₂₀	8T97	DT	16	8
U ₂₁	8T97	DS	16	8
U ₂₂	8097	AY	16	8
U ₂₃	8097	AX	16	8
U ₂₄	8097	AW	16	8
U ₂₅	8T97	AV	16	8
U ₂₆	8T97	AT	16	8
U ₂₇	8T97	AS	16	8
U ₂₈	74157	DR	16	8
U ₂₉	74157	DP	16	8
U ₃₀	74157	CP	16	8
U ₃₁	8160	CN	16	8
U ₃₂	7430	BN	14	7
U ₃₃	8097	AR	16	8
U ₃₄	8097	AP	16	8
U ₃₅	74161	AN	16	8
U ₃₆	74161	CM	16	8
U ₃₇	74161	Bm	16	8
U ₃₈	74161	AM	16	8
U ₃₉	74154	DNM	24	12
U ₄₀	7400	DL	14	7
U ₄₁	7400	CL	14	7
U ₄₂	7400	BL	14	7
U ₄₃	7400	AL	14	7
U ₄₄	7404	DK	14	7
U ₄₅	7402	CK	14	7
U ₄₆	7402	BK	14	7
U ₄₇	74\$04	AK	14	7
U ₄₈	7474	BCJ	14	7

BERG H-854 WIRING VIEW			
SIGNAL	PIN	SIGNAL	
GND	B	A	GND
D ₁₅	D	C	D ₁₄
D ₁₃	F	E	D ₁₂
D ₁₁	J	H	D ₁₀
D ₉	L	K	D ₈
D ₇	N	M	D ₆
D ₅	R	P	D ₄
D ₃	T	S	D ₂
D ₁	V	U	D ₀
GND	X	W	GND
A ₁₀	Z	Y	A ₉
A ₈	BB	AA	A ₇
A ₆	DD	CC	A ₅
A ₄	FF	EE	A ₃
A ₂	JJ	HH	A ₁
Q	LL	KK	S
T	NN	MM	READY
SXB	RR	PP	INIT
SPARE	TT	SS	SPARE
GND	VV	UU	GND

BUFFER MEMORY



NOTES

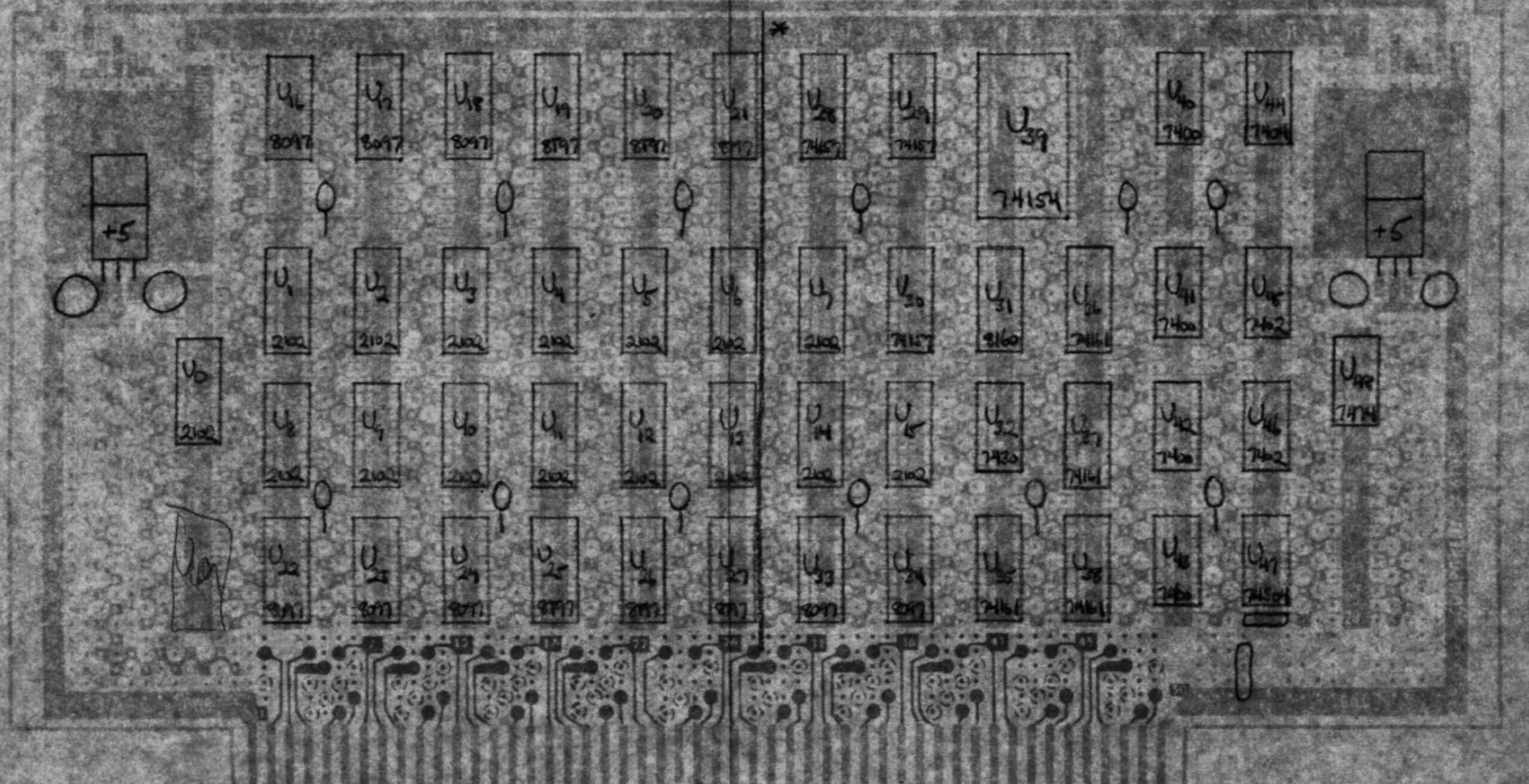
1. RECOMMENDED LOCATION FOR T464 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND RIGHT SIDE REGULATOR POSITION.
2. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE.
3. DASHED CIRCLE PADS REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD.
4. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS.
5. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS.



VECTOR D.I.P. PLUGBOARD
PATTERN .042" X 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

BUFFER MEMORY



NOTES

1. RECOMMENDED LOCATION FOR T464 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND LEFT SIDE REGULATOR POSITION.
2. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE.
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BINGHAMTON, N.Y.
9/77 R.B.
PAGE 3 OF 3

VECTOR D.I.P. PLUGBOARD
PATTERN .042" X 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

* POWER PLANE CUT TO SEPARATE OUTPUTS* FROM TWO +5V REGULATORS

ELEMENT BUS

1	+9V	51	+9V
2	+19V	52	-19V
3	XRDY	53	SSW DSB
4	<u>Q1</u>	54	EXT CLR
5	<u>Q2</u>	55	
6	<u>Q3</u>	56	BYTE
7	<u>ETF</u>	57	DIO8
8	<u>CEM</u>	58	DIO9
9	<u>CME</u>	59	DIO10
10	<u>FTE</u>	60	DIO11
11	<u>TR</u>	61	DIO12
12	X CLOCK	62	DIO13
13	X LOAD	63	DIO14
14	Y CLOCK	64	DIO15
15	Y LOAD	65	
16	HDTTL	66	SCTTL
17	RESERVE SPARE	67	
18	<u>STA DSB</u>	68	MWRT
19	<u>C/C DSB</u>	69	PS
20	UNPROT	70	PROT
21	SS	71	RUN
22	<u>ADD DSB</u>	72	PRDY
23	<u>DO DSB</u>	73	PINT
24	<u>Q2</u>	74	PHOLD
25	<u>Q1</u>	75	PRESET
26	PHLDA	76	PSYNC
27	PWAIT	77	WE
28	PINTE	78	RE
29	A5	79	A0
30	A4	80	A1
31	A3	81	A2
32	A15	82	A6
33	A12	83	A7
34	A9	84	A8
35	D1	85	A13
36	D0	86	A14
37	A10	87	A11
38	D4	88	D2
39	D5	89	D3
40	D6	90	D7
41	DI2	91	DI4
42	DI3	92	DI5
43	DI7	93	DI6
44	SM1	94	DI1
45	SOUT	95	DI0
46	SINP	96	SINTA
47	SMEMR	97	SWO
48	SHLTA	98	S STACK
49	CLOCK	99	POC
50	GND	100	GND

DON SIGNALS

<u>Q1</u>	{	From BUFFER MEMORY
<u>Q2</u>		
<u>Q3</u>		
<u>CEM</u>		
<u>CME</u>	{	From Bus Indicator
<u>ETF</u>		
<u>FTE</u>	{	From CLOCK BOARD
<u>TR</u>		
RESERVE		
A0 - A9		
D0 - D7		
DIO8 - DIO15		

JEFF SIGNALS

X CLOCK
X LOAD
Y CLOCK
Y LOAD
HDTTL
SCTTL
<u>WE</u> (<u>PWR</u>)
<u>RE</u> (INVERSE PDBIN)
BYTE

NOTES

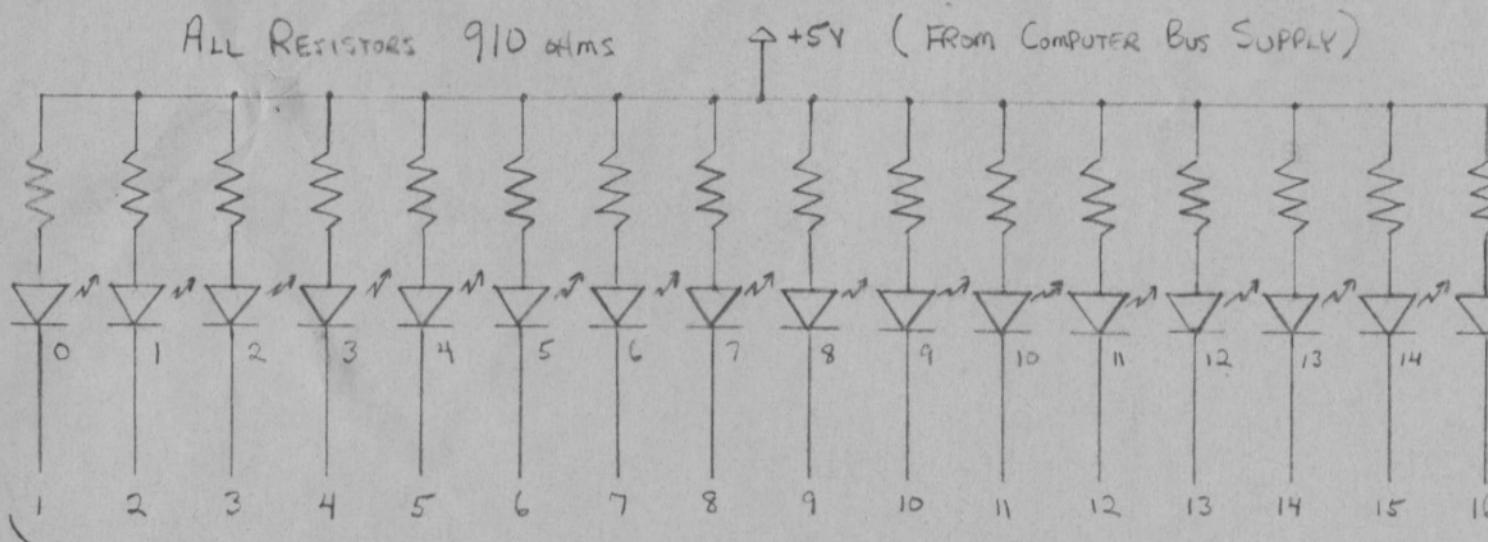
- ① PIN 17 CARRIES NEGATIVE GOING V.D. (DELETED)
TR IS THE SAME AS VDTTL.
- ② D0 - D7 ARE DATA OUT FOR ALTAIR, AND DATA IN-OUT FOR DON'S SYSTEM.
- ③ SIGNALS OTHER THAN DON'S OR JEFF'S ARE TAKEN FROM THE ALTAIR 8800 BUS STRUCTURE.
- ④ PINS 4-11 ARE DESIGNATED "VECTORED INTERRUPT LINES" IN THE ALTAIR BUS.
- ⑤ Q1 AND Q2 ARE DON SIGNALS THAT ARE UNRELATED TO Q1 AND Q2 ALTAIR SIGNALS.

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COMPUTER PROJECT 9/77

ELEMENT BUS

R.B.

BUS INDICATOR LED PANEL

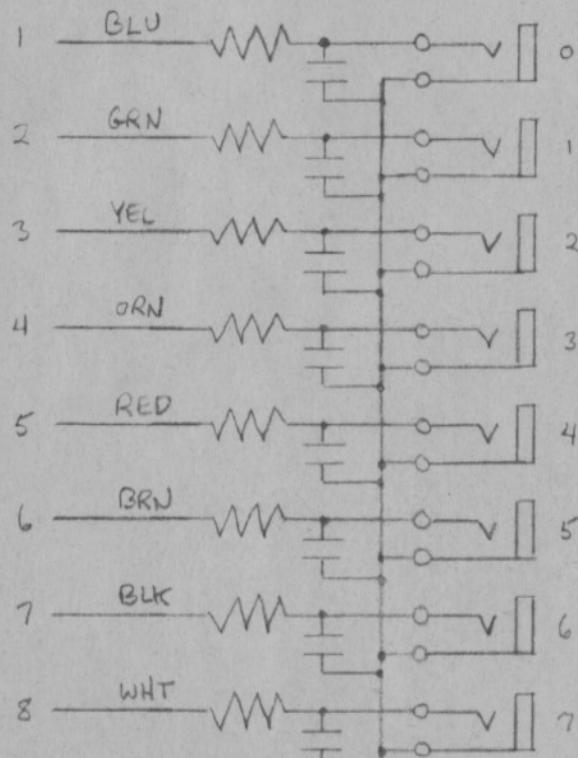


DIP PLUG

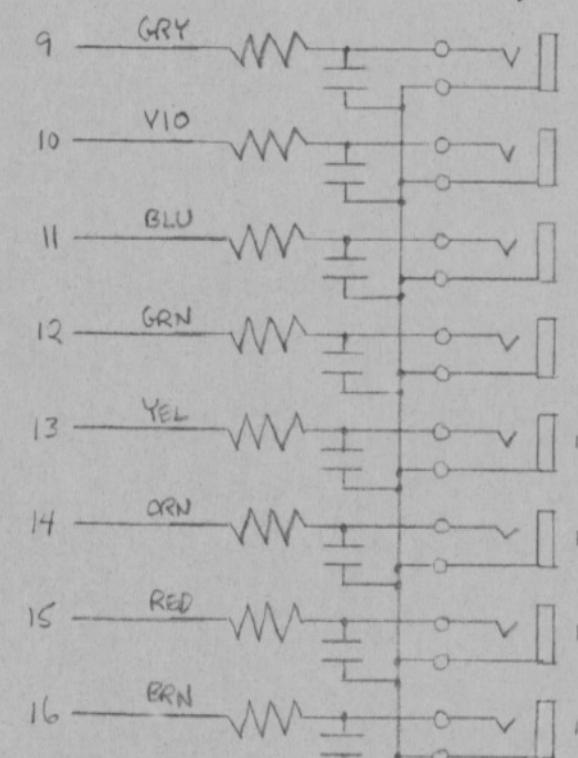
D/A OUTPUT PANEL

(MINIATURE PHONE JACKS)

16-Pin DIP PLUG, ALL RESISTORS 1K ohms

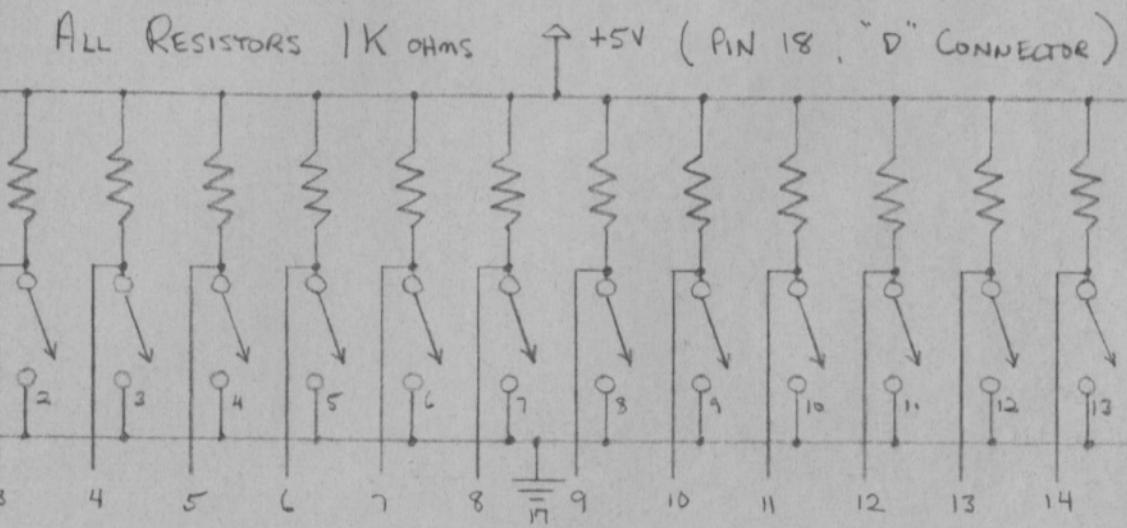


16 PIN DIP PLUG, ALL CAPACITORS 1uF



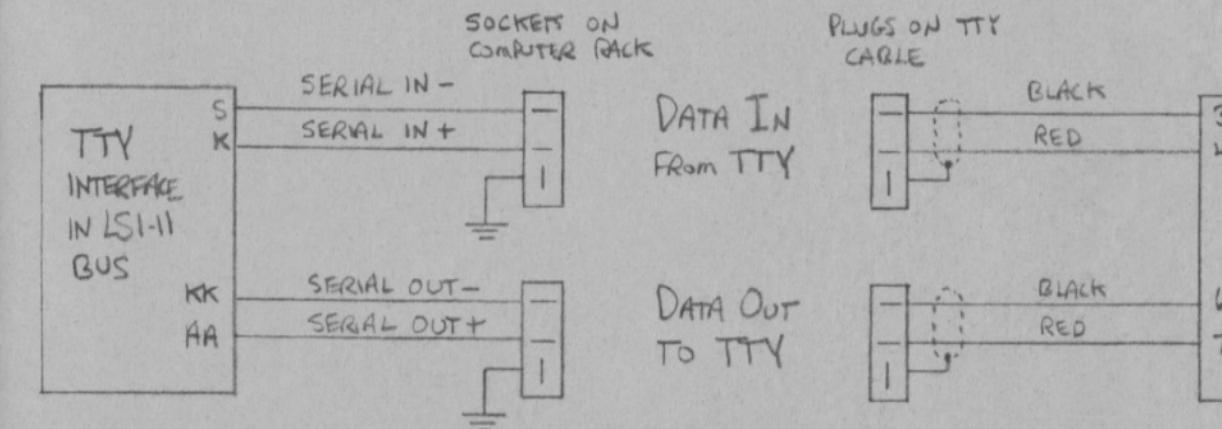
GROUNDED DIRECTLY TO D/A BOARD

REAL TIME INPUT Box



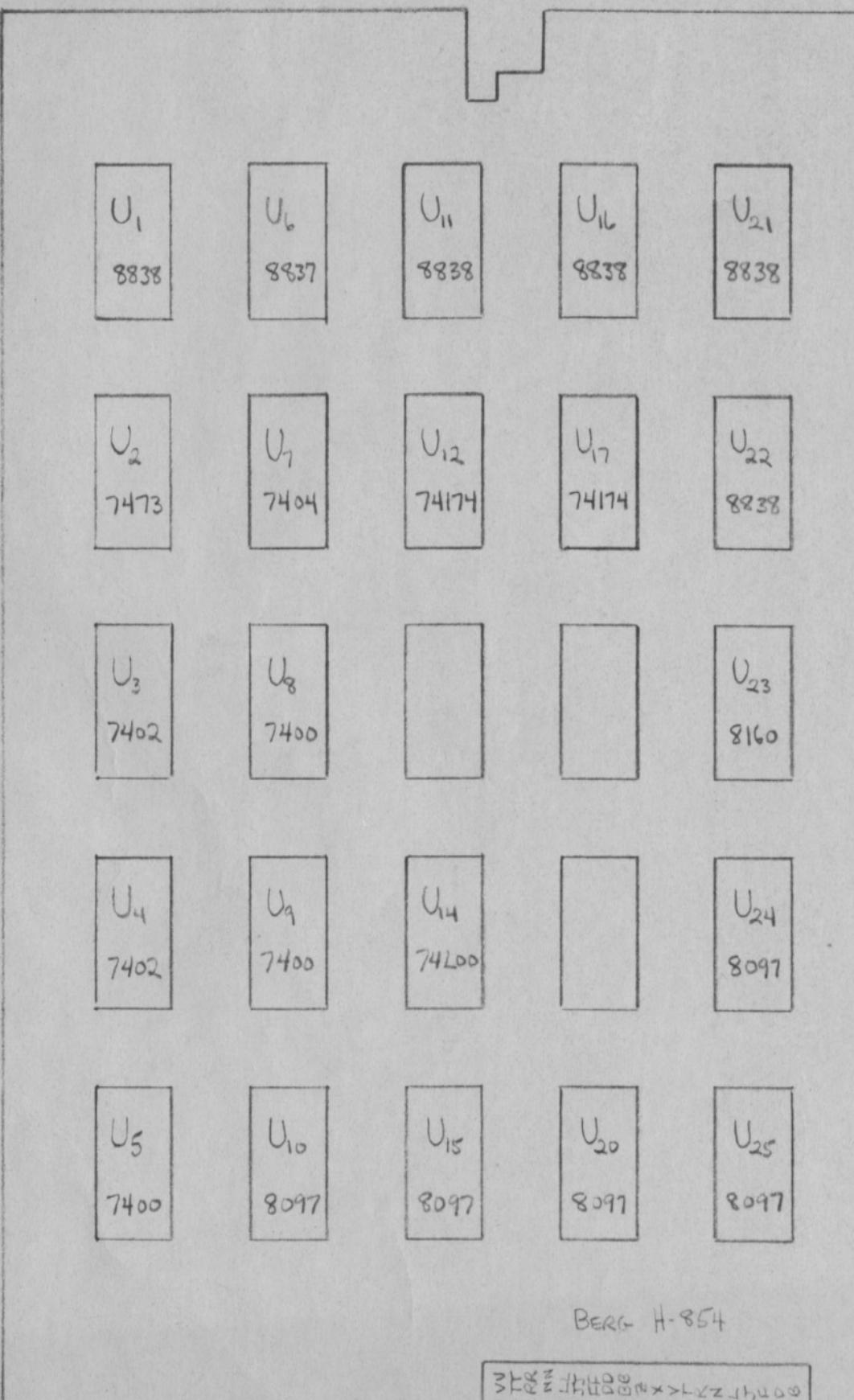
AMPHENOL "D" CONNECTOR

TTY CONNECTIONS



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COMPUTER PROJECT
MISC. RACK WIRING
9/77 R.B.

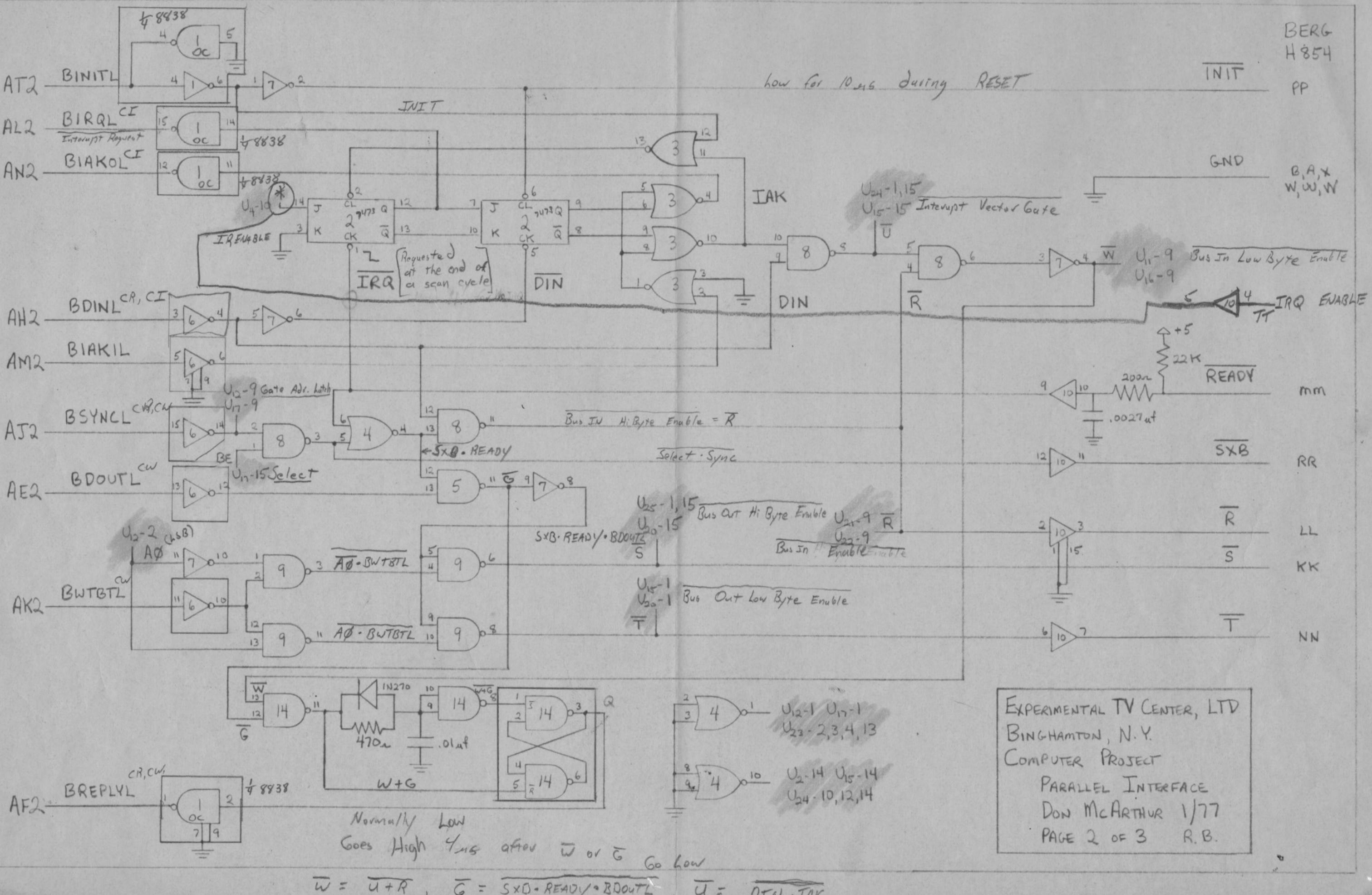
COMPONENT SIDE



PARTS LIST:

QUANTITY	DESCRIPTION	Vcc PIN	Gnd PIN
4	SN7400N QUAD 2-INPUT NAND	14	7
2	SN7402N QUAD 2-INPUT NOR	14	7
1	SN7404N HEX INVERTER	14	7
1	SN7473N DUAL JK MASTER/SLAVE FLIP FLOP	4	11
2	SN74174N HEX D FLIP FLOP WITH CLEAR	16	8
5	DM8097N TRI-STATE HEX BUFFER	16	8
1	DM8160N 6-BIT COMPARATOR	16	8
1	DM8837N HEX UNIFIED BUS RECEIVER	16	8
5	DM8838N QUAD UNIFIED BUS TRANSCIVER	16	8
1	DIGITAL W943 PROTOBOARD		
1	BERG H854 CONNECTOR		
1	N270 GERMANIUM DIODE		
200 μ	1/4 WATT RESISTOR		
170 μ	" "		
K	" "		
22K	" "		
01uf	DISK CAPACITOR		
0027uf	" "		

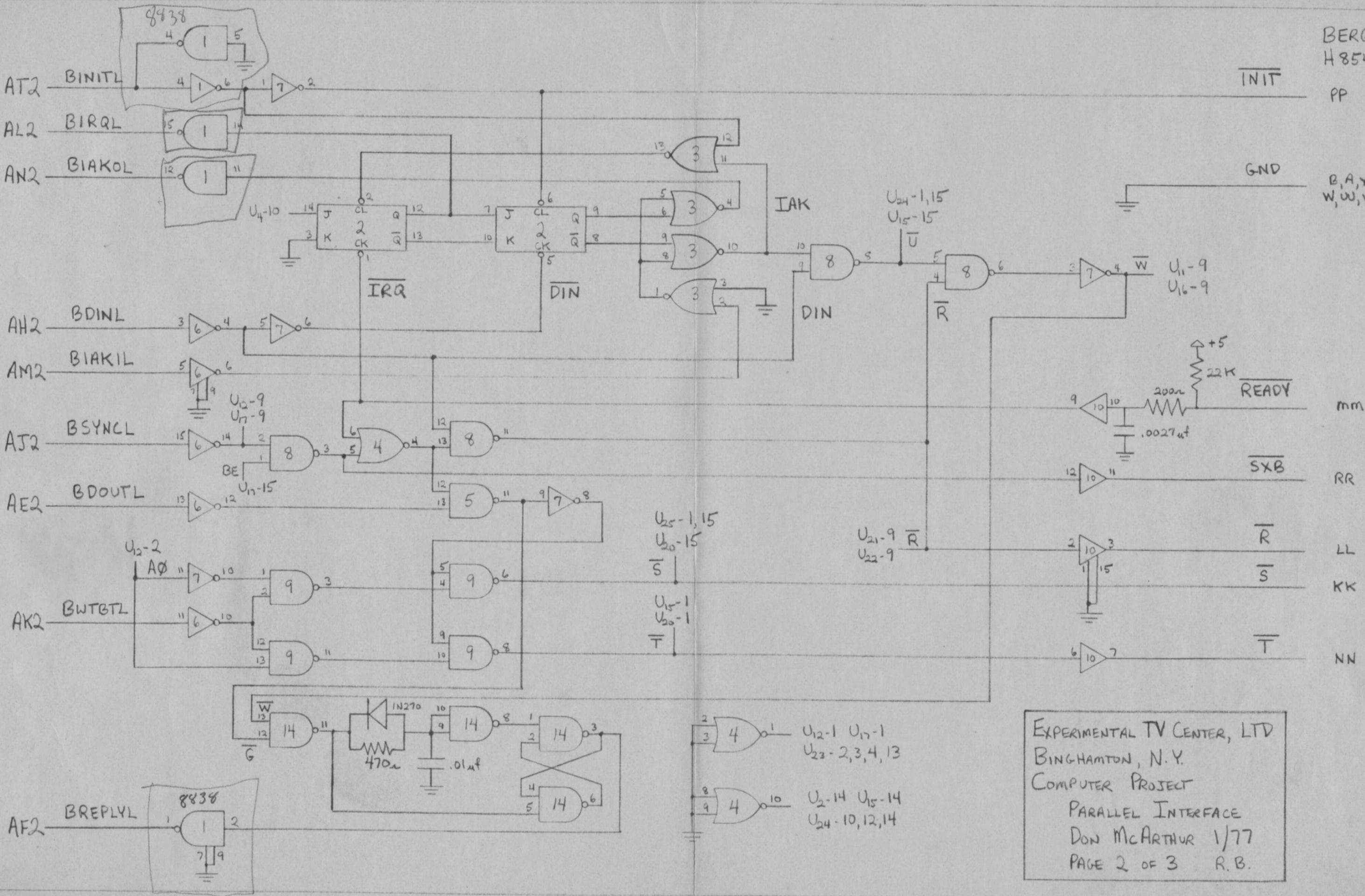
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COMPUTER PROJECT
PARALLEL INTERFACE
DON McARTHUR 1/77
PAGE 1 OF 3 R.B.



BERG
H854
PP

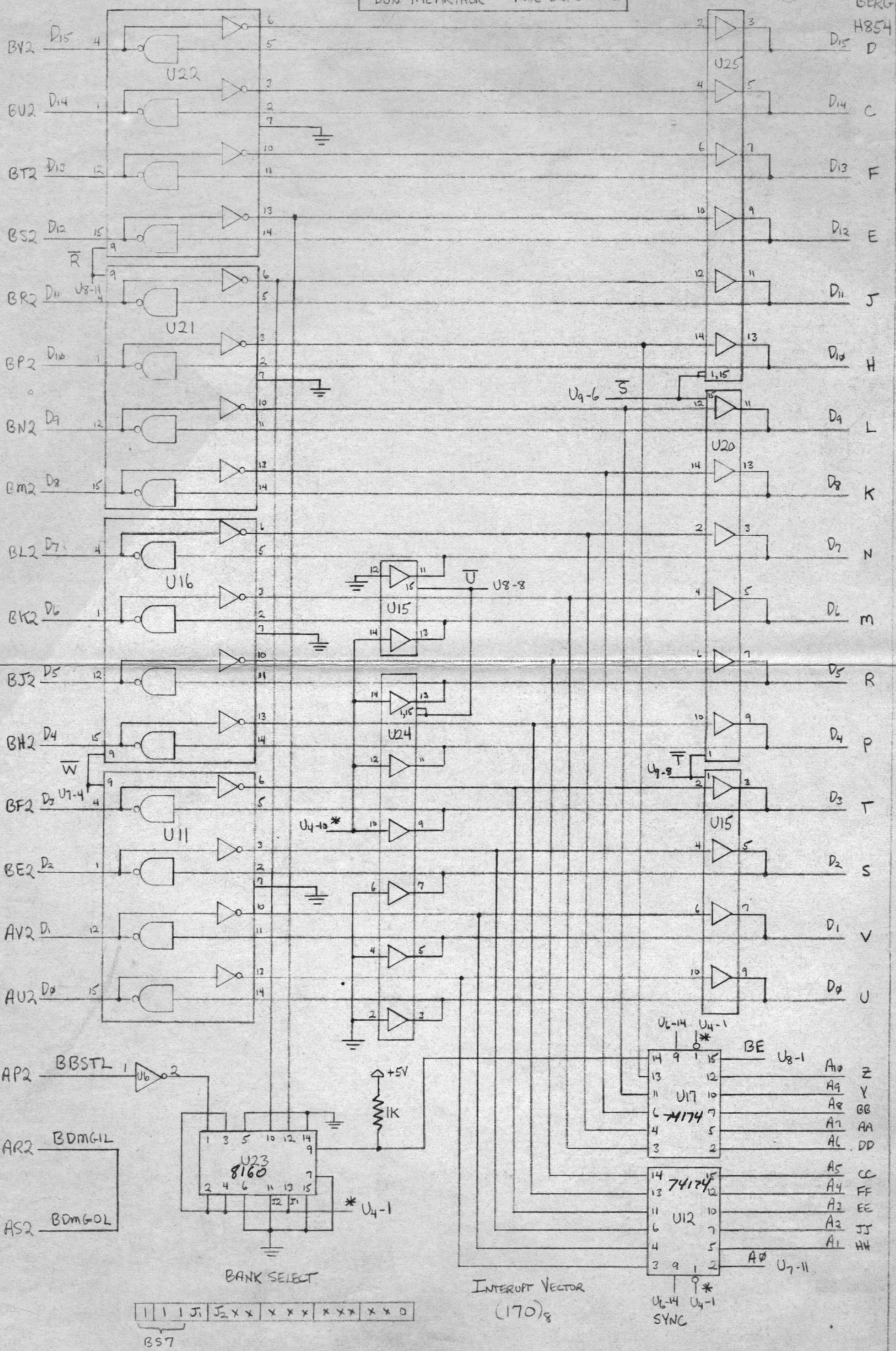
INIT

B,A,X
W,W,W

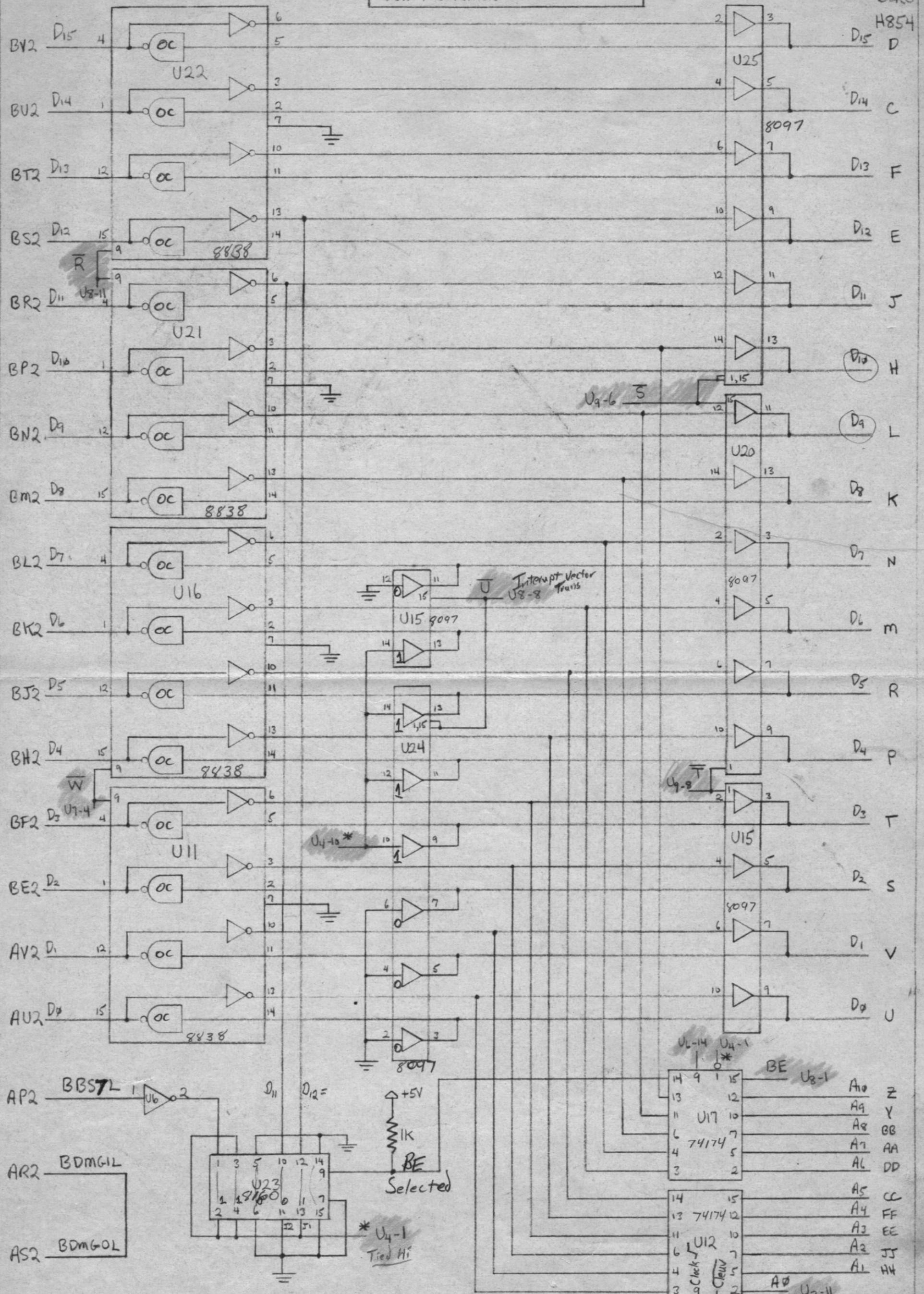


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COMPUTER PROJECT
PARALLEL INTERFACE
DON McARTHUR 1/77
PAGE 2 OF 3 R.B.

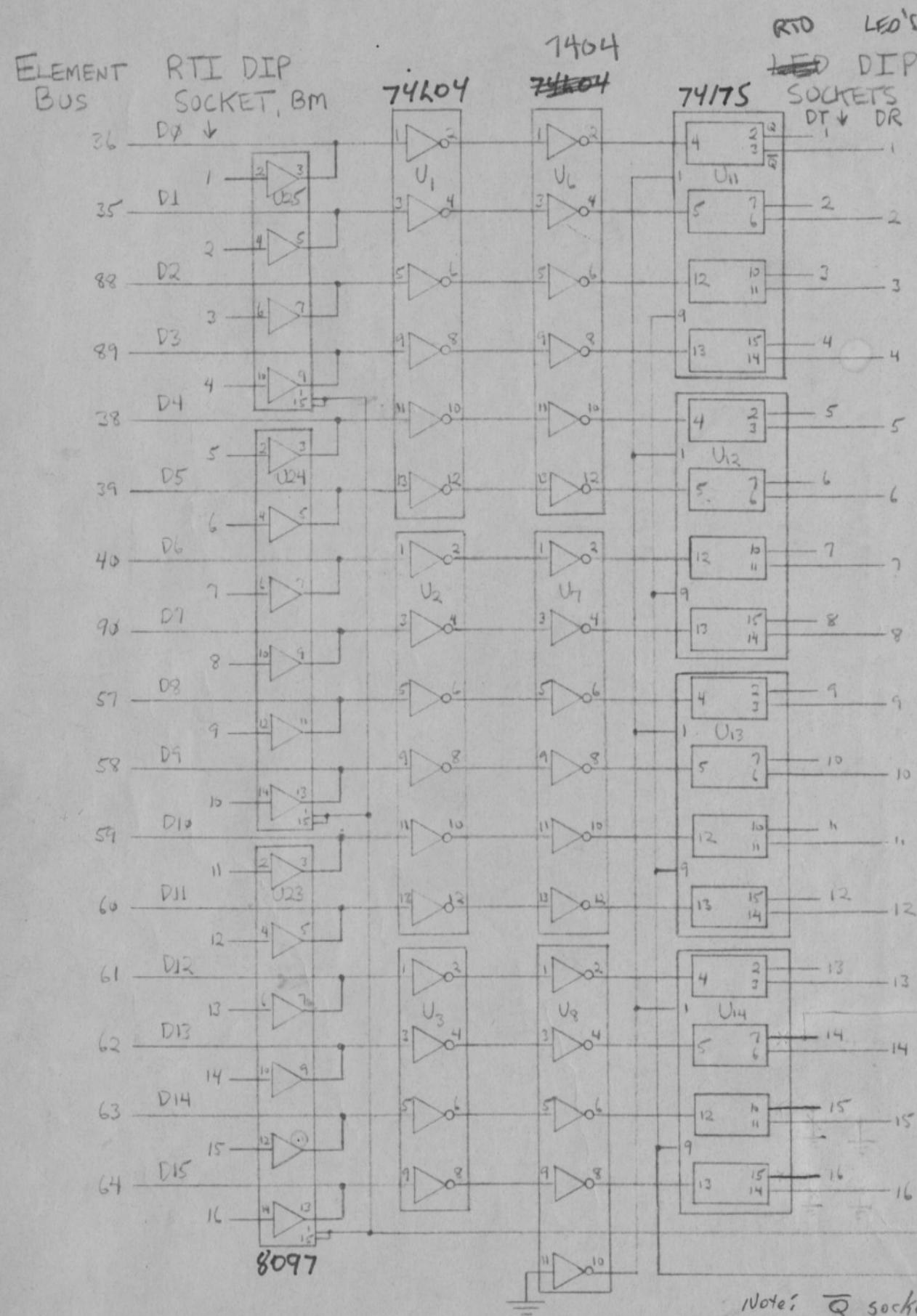
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PARALLEL INTERFACE 1/77
DON McARTHUR PAGE 3 OF 3 R.B.



EXPERIMENTAL TV CENTER, LTD
PARALLEL INTERFACE 1/77
DON McARTHUR PAGE 3 OF 3 R.B.

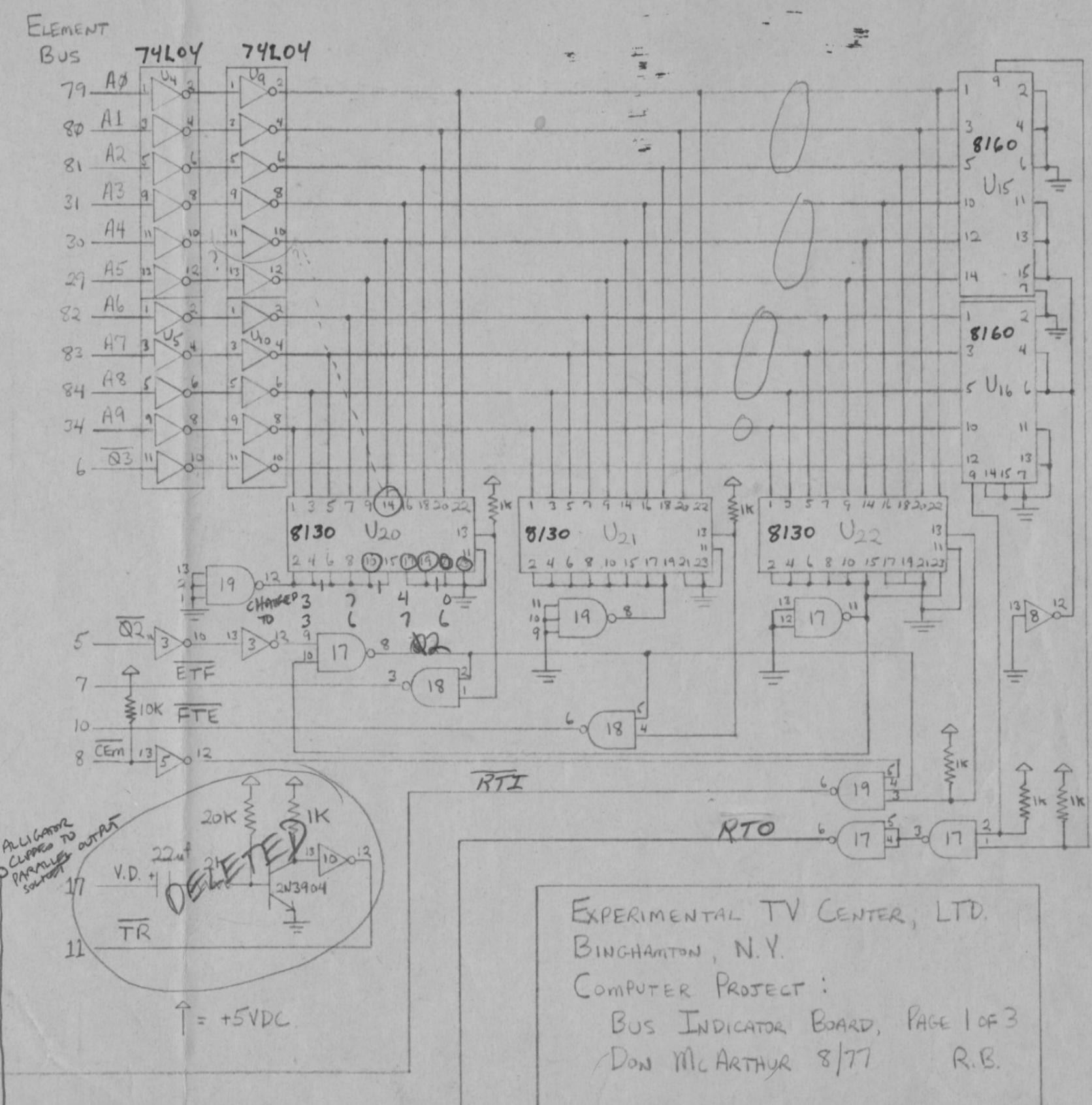


$$BE = BS7 \cdot A_{12} \cdot \overline{A_{11}} = [F000, F7FF]$$



Note: \overline{Q} socket is for led.

Q socket modified for Jones switcher control

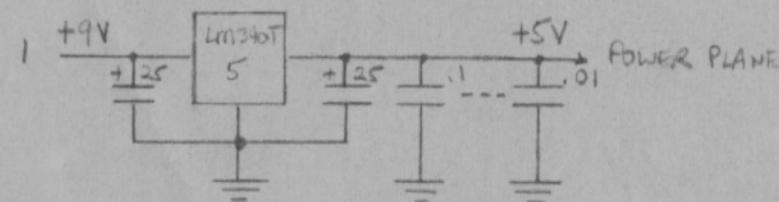


EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT:
BUS INDICATOR BOARD, PAGE 1 OF
DON McARTHUR 8/77 R.B.

PARTS LIST

1	VECTOR 8800V UNIVERSAL 100-PIN PLUGBOARD
12	16-PIN DIP WIRE WRAP SOCKETS
13	14-PIN DIP " " "
3	24-PIN DIP " " "
1	HEAT SINK FOR REGULATOR
1	LM340T-5 REGULATOR
1	2N3904 NPN TRANSISTOR
1	SN7400N QUAD 2-INPUT NAND
1	SN7403N QUAD 2-INPUT NAND, OPEN COLLECTOR
1	SN7410N TRIPLE 3-INPUT NAND
5	SN7404N HEX INVERTER
5	SN74L04N HEX INVERTER
4	SN74175N QUAD D FLIP FLOP
3	DM8097N TRI-STATE HEX BUFFER
3	DM8130N 10-BIT COMPARATOR
2	DM8160N 6-BIT COMPARATOR
3	.22uf 25V ELECTROLYTIC CAPACITOR
3	.1uf 35V TANTALUM CAPACITOR
10	.01uf 100V MYLAR CAPACITOR
6	1K 1/4 WATT RESISTOR
1	2K 1/4 WATT RESISTOR
1	20K 1/4 WATT RESISTOR

NUMBER	CHIP	LOCATION	V _{CC} PIN	GND PIN
U ₁	74L04	AV	14	7
U ₂	74L04	AT	14	7
U ₃	74L04	AS	14	7
U ₄	74L04	AR	14	7
U ₅	74L04	AP	14	7
U ₆	7404	BV	14	7
U ₇	7404	BT	14	7
U ₈	7404	BS	14	7
U ₉	7404	BR	14	7
U ₁₀	7404	BP	14	7
U ₁₁	74175	CW	16	8
U ₁₂	74175	CV	16	8
U ₁₃	74175	CT	16	8
U ₁₄	74175	CS	16	8
U ₁₅	8160	CR	16	8
U ₁₆	8160	CP	16	8
U ₁₇	7400	CN	14	7
U ₁₈	7403	CM	14	7
U ₁₉	7410	CL	14	7
U ₂₀	8130	DPN	24	12
U ₂₁	8130	DNM	24	12
U ₂₂	8130	DML	24	12
U ₂₃	8097	AN	16	8
U ₂₄	8097	AM	16	8
U ₂₅	8097	AL	16	8



BUFFER MEMORY ADDRESS MAP

170000	F000
170040	16 D/A'S
170076	BUS INDICATOR
171560	(U ₁₅ , U ₁₆)
173676	
173740	
173742	FEATURE AREA
173770	F.A. STOP (U ₂₁)
173776	STATUS REGISTER

F7FE/ F800

THE FOUR CIRCUITS ON THE BUS INDICATOR CARD

- ① BUS INDICATOR CIRCUIT
- ② BUFFER MEMORY MODE CONTROLLER
- ③ REAL-TIME INPUT CIRCUIT
- ④ V.D. TO TTL CONVERTER

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BINGHAMTON, N.Y.
COMPUTER PROJECT

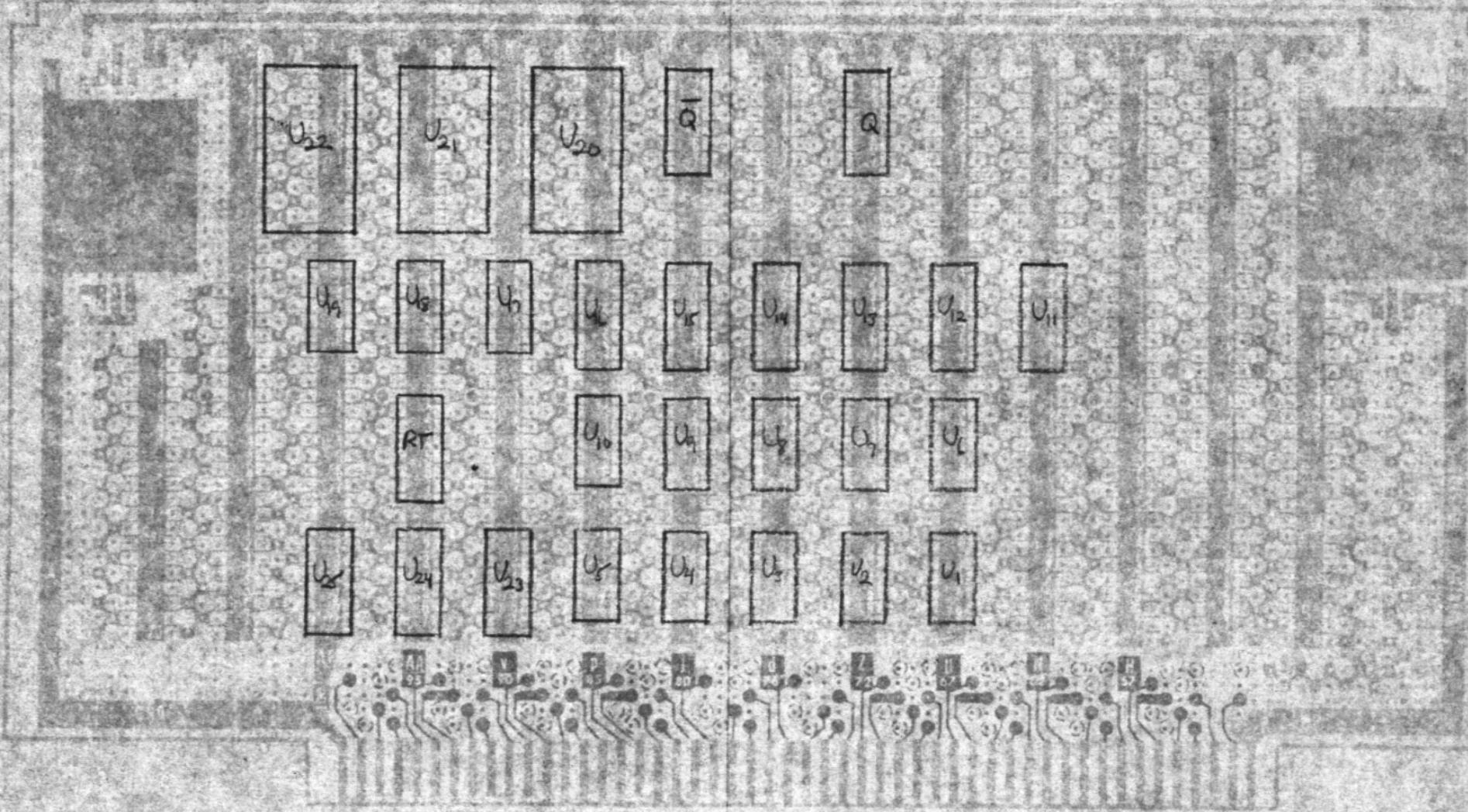
BUS INDICATOR BOARD 8/77

DON McARTHUR

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R.B

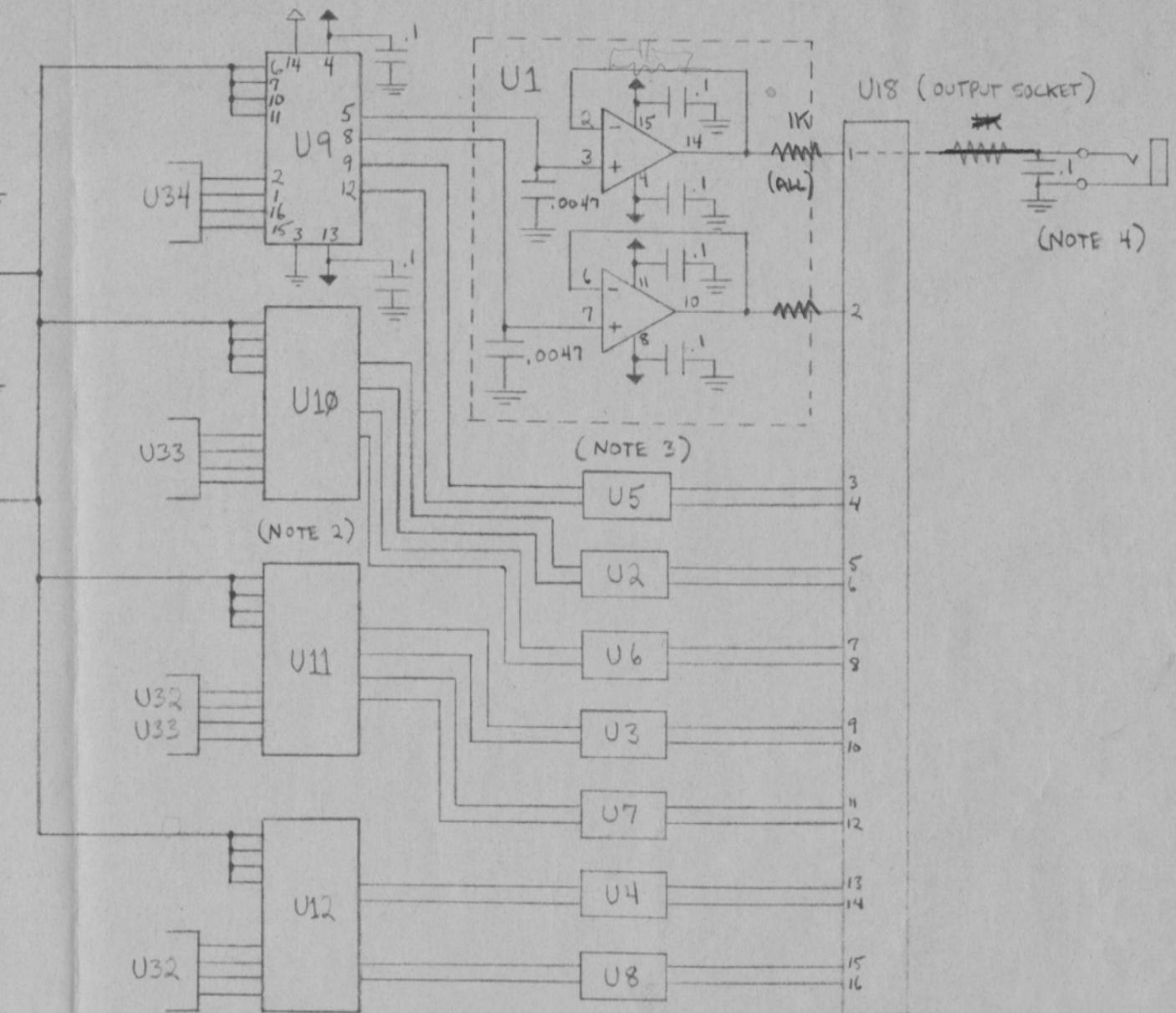
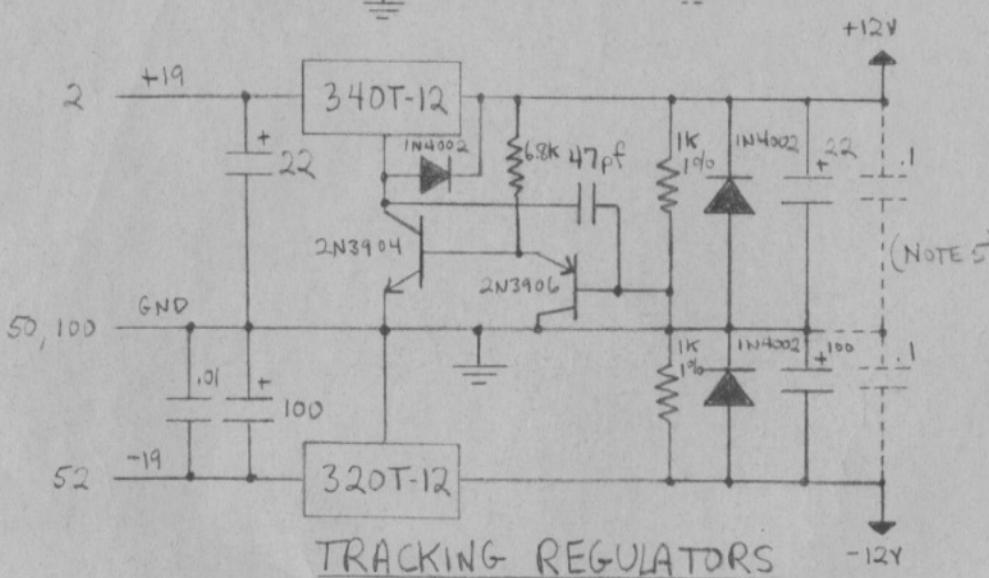
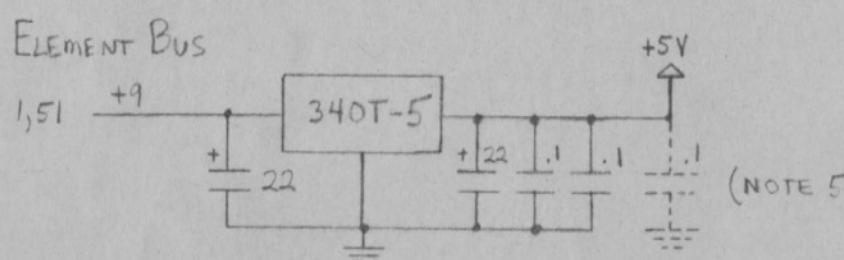
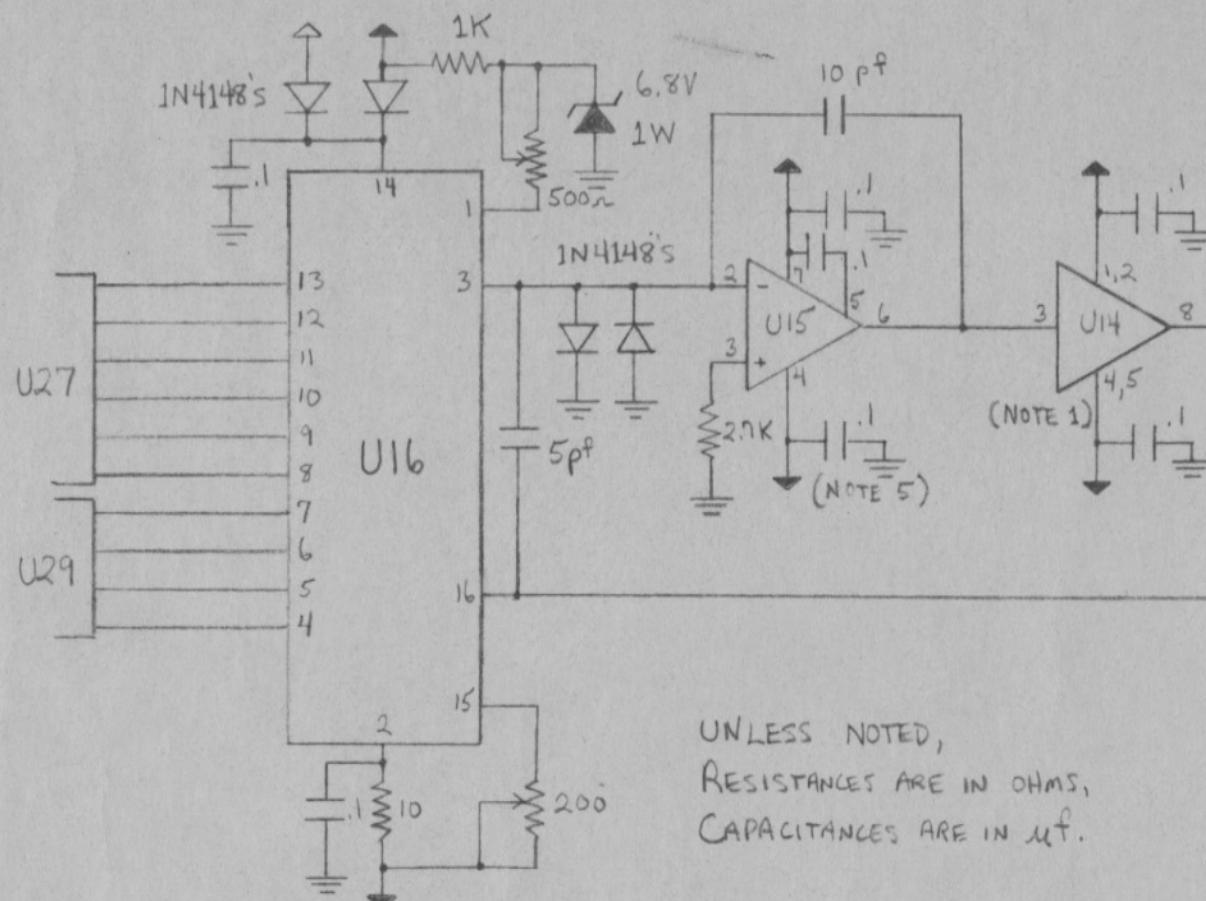
BUS INDICATOR



- 1 - SET BY INTERFACE JUMPERS
- 2 - SET HERE BY U21 JUMPERS
- 3 - SELECT D/A CHANNEL HERE

170040 to 170076

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y. (PAGE 1 OF 4)
COMPUTER PROJECT
D/A BOARD, DIGITAL SECTION
DON McARTHUR 8/77 R.B.



NOTES :

- 1) U14 (LH0002CN) IS A 10-PIN DIP.
- 2) U10-U12 ARE CONFIGURED SIMILARLY TO U9.
- 3) U2-U8 ARE CONFIGURED SIMILARLY TO U1, WHICH CONSISTS OF 2 LM307N CHIPS IN ONE 16-PIN SOCKET.
- 4) SEE DESCRIPTION OF D/A OUTPUT PANEL.
- 5) 1uF TANTALUM CAPACITORS ARE PLACED CLOSE TO POWER SUPPLY PINS OF ALL ANALOG CHIPS.

EXPERIMENTAL TV CENTER, LTD
BINGHAMTON, N.Y.
COMPUTER PROJECT
D/A BOARD (PAGE 2 OF 4)
ANALOG SECTION
DON McARTHUR 8/77 R.B.

PARTS LIST

1 VECTOR 8800V UNIVERSAL 100-PIN PLUGBOARD
 26 16-PIN DIP WIRE WRAP SOCKETS
 8 14-PIN DIP " " "
 1 24-PIN DIP
 3 HEAT SINKS
 1 LM340T-5 VOLTAGE REGULATOR CHIP
 1 LM340T-12 " " "
 1 LM320T-12 " " "
 1 2N3904 TRANSISTOR (NPN)
 1 2N3906 " (PNP)
 1 IN4148 DIODES
 3 IN4002 DIODES
 1 6.8V 1 WATT ZENER DIODE
 1 SN7400N QUAD 2-INPUT NAND
 6 SN7404N HEX INVERTER
 3 SN7489N 64-BIT RAM
 1 SN74123N MONOSTABLE MULTIVIBRATOR
 1 SN74154N 4-LINE TO 16-LINE DEMULTIPLEXER
 1 SN74157N QUAD 2:1 DATA SELECTOR
 1 SN74161N BINARY COUNTER
 1 DM8131N 6-BIT UNIFIED BUS COMPARATOR
 3 DM8837N HEX UNIFIED BUS RECEIVER
 1 DAC 100 10-BIT D/A
 1 LM318N HIGH SPEED OP AMP
 1 LH0002CN CURRENT AMP
 3 AH0015CD QUAD ANALOG SWITCH
 16 LM307N OP AMP

CAPACITORS

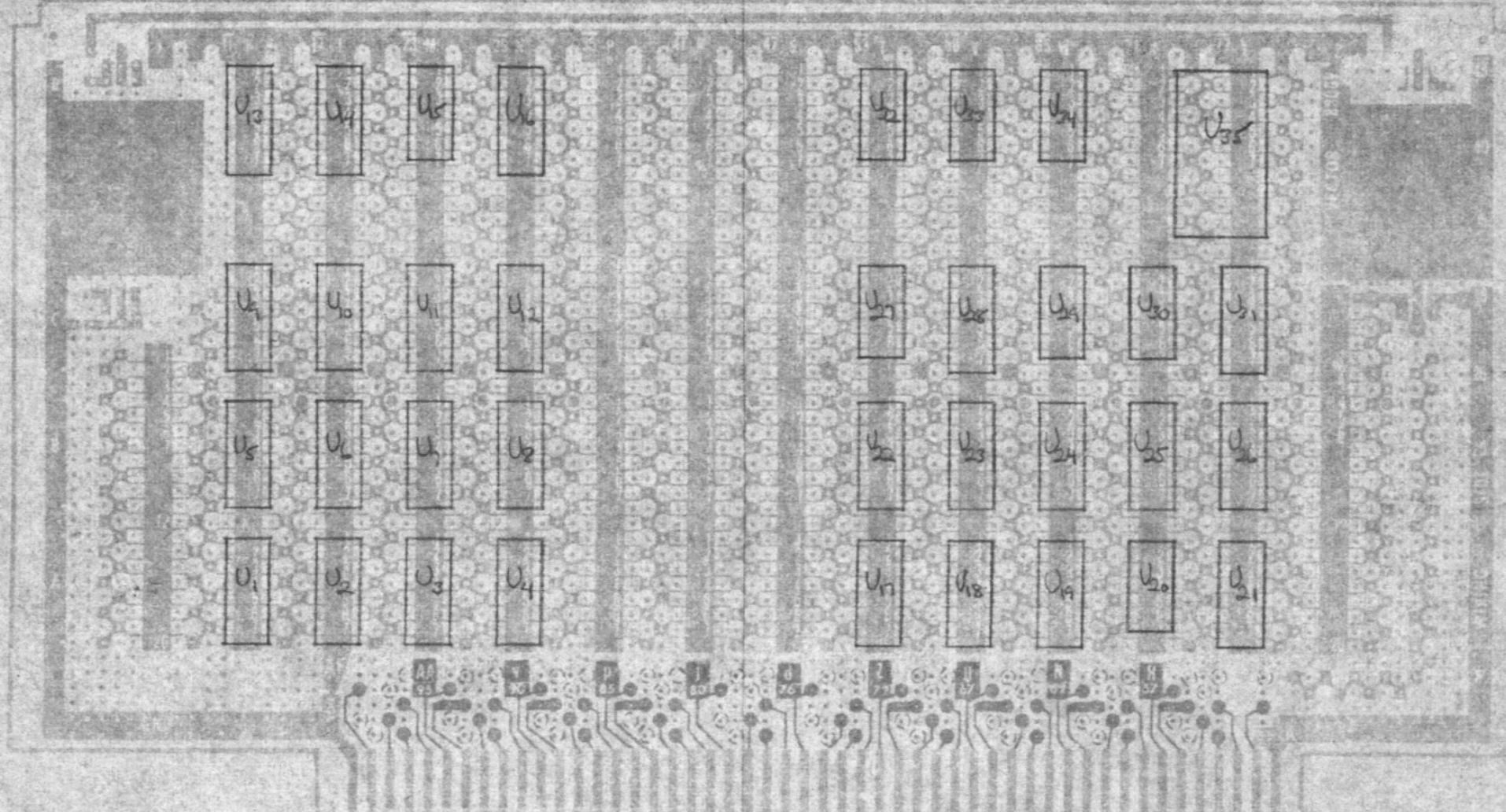
2 100 μ F 25V ELECTROLYTIC 2 1K 1/2 WATT 1%
 4 22 μ F 25V " 1 12K 1/4 WATT 5%
 1 1 μ F 50V " 1 10K "
 38 .1 μ F 35V TANTALUM 1 6.8K "
 1 .05 μ F DISK 1 2.7K "
 1 .01 μ F MYLAR 1 1K "
 16 .0047 μ F " 1 100 μ F "
 2 .0027 μ F DISK 1 82 μ F "
 1 47 μ F " 1 10 μ F "
 1 10 μ F " 1 500 μ F TRIMPOT
 1 5 μ F " 1 200 μ F "

RESISTORS

	<u>NUMBER</u>	<u>CHIP</u>	<u>LOCATION</u>	<u>+12 PIN</u>	<u>-12 PIN</u>	<u>+5 PIN</u>	<u>GND PIN</u>
	U1	2-307	AK	11, 15	4, 8		
	U2	2-307	AL	11, 15	4, 8		
	U3	2-307	AM	11, 15	4, 8		
	U4	2-307	AN	11, 15	4, 8		
	U5	2-307	BK	11, 15	4, 8		
	U6	2-307	BL	11, 15	4, 8		
	U7	2-307	BM	11, 15	4, 8		
	U8	2-307	BN	11, 15	4, 8		
	U9	AH0015	CK	4	13	14	3
	U10	AH0015	CL	4	13	14	3
	U11	AH0015	CM	4	13	14	3
	U12	AH0015	CN	4	13	14	3
	U13	OUT SOCKET	DK				
	U14	LH0002	DL	1, 2	4, 5		
	U15	LM318	DM	7	4		
	U16	DAC 100	DN	14	2		
	U17	8837	AT			16	8
	U18	8837	AY			16	8
	U19	8837	AW			16	8
	U20	7400	AX			14	7
	U21	8131	AY			16	8
	U22	7489	BT			16	8
	U23	7489	BV			16	8
	U24	7489	BW			16	8
	U25	74157	BX			16	8
	U26	74161	BY			16	8
	U27	7404	CT			14	7
	U28	PULL-UPS	CV			16	
	U29	7404	CW			14	7
	U30	7404	CX			14	7
	U31	74123	CY			16	8
	U32	7404	DT			14	7
	U33	7404	DV			14	7
	U34	7404	DW			14	7
	U35	74154	DXY			24	12

EXPERIMENTAL TV CENTER, LTD., BINGHAMTON, N.Y.
 COMPUTER PROJECT : D/A BOARD (PAGE 3 OF 4)
 DON McARTHUR 8/77 R. B.

D/A



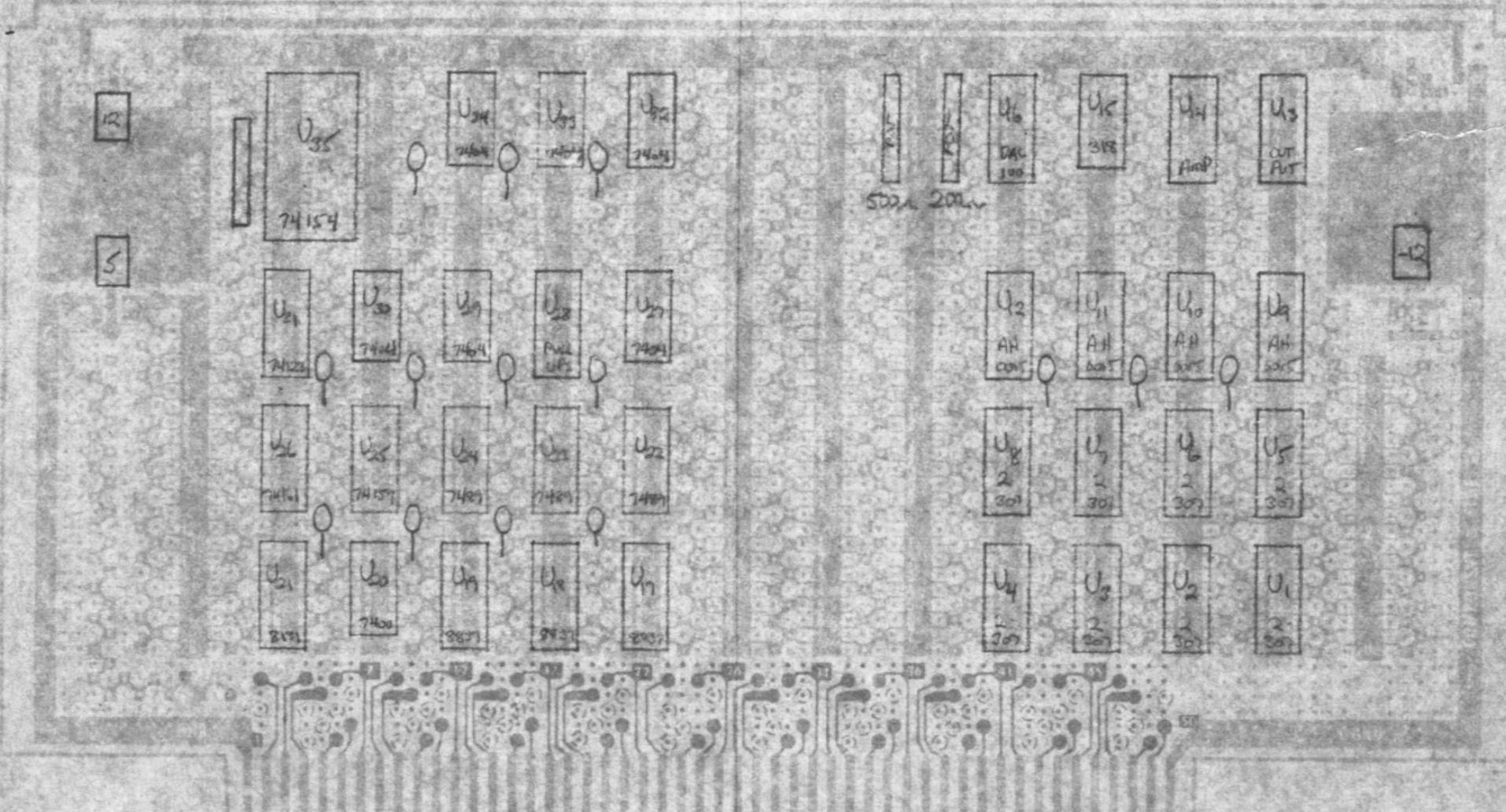
NOTES:

5. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND RIGHT SIDE REGULATOR POSITION
4. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE
3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD
2. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS
1. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS

VECTOR D.I.P. PLUGBOARD
PATTERN .042" X 0.1" SPACED HOLES
LA13P2 - LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12480 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

D/A



E.T.C., LTD.
BINGHAMTON, N.Y.
8/77 R.B.
PAGE 4 OF 4

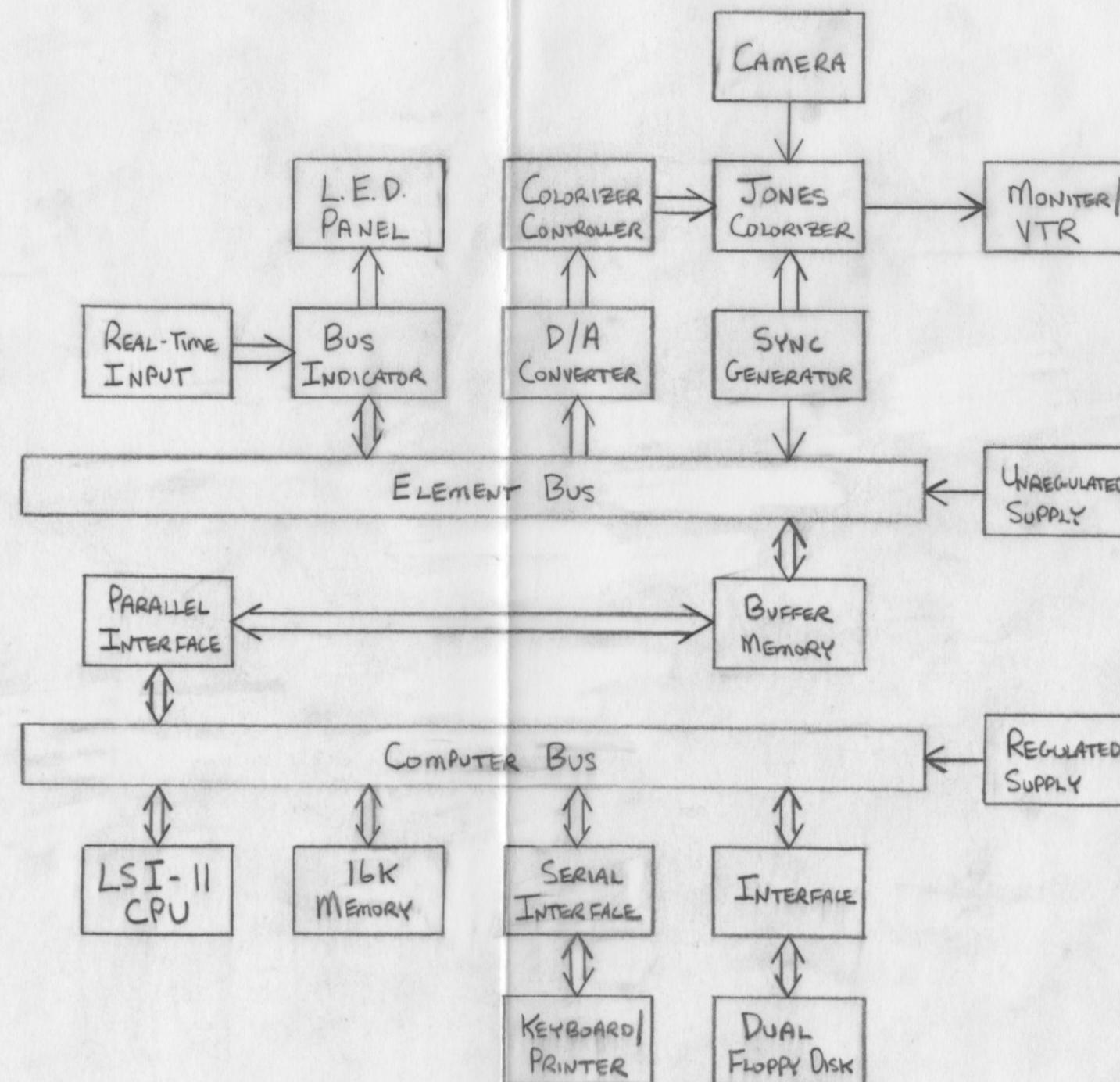
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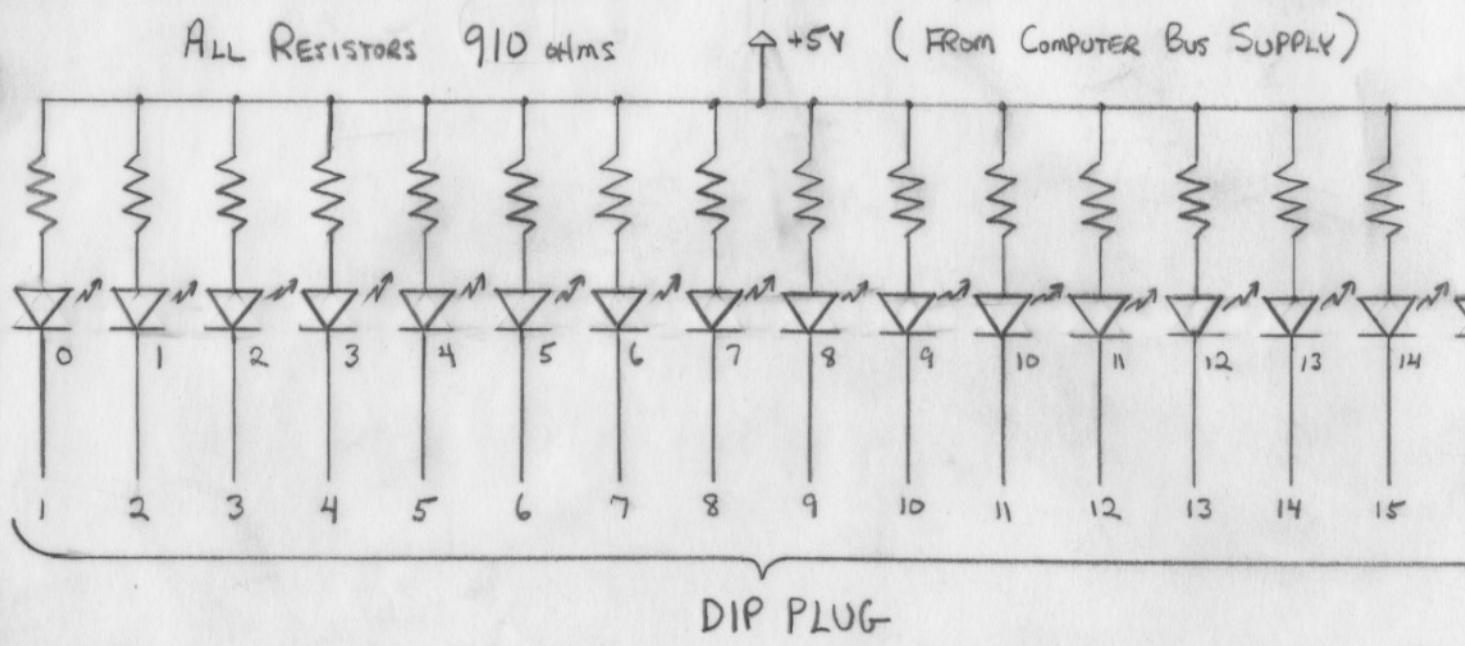
VECTOR D.I.P. PLUGBOARD
PATTERN .042" X 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
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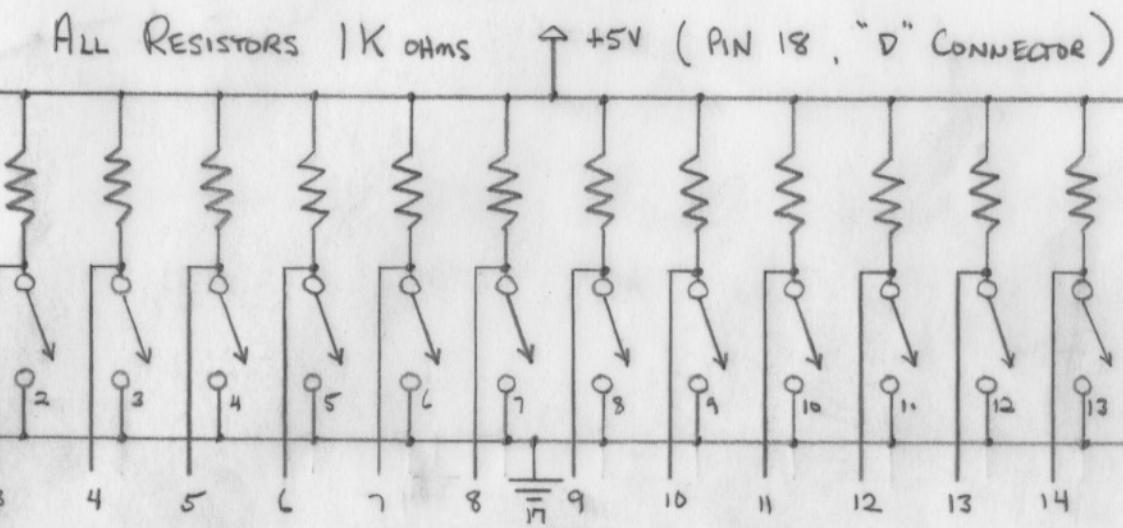
EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y.
 COMPUTER - BASED
 PROCESSING VIDEO SYNTHESIZER
 SYSTEM DIAGRAM, 9/77 R.B.



BUS INDICATOR LED PANEL



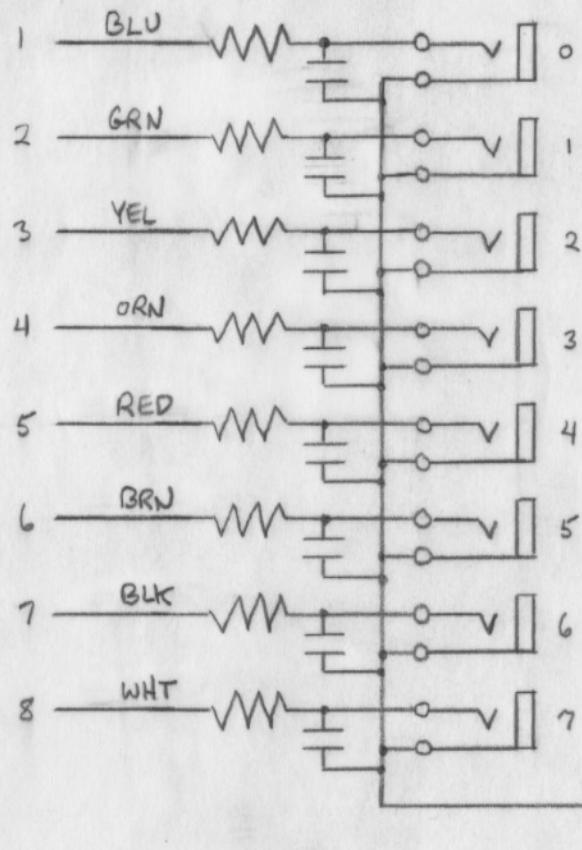
REAL TIME INPUT BOX



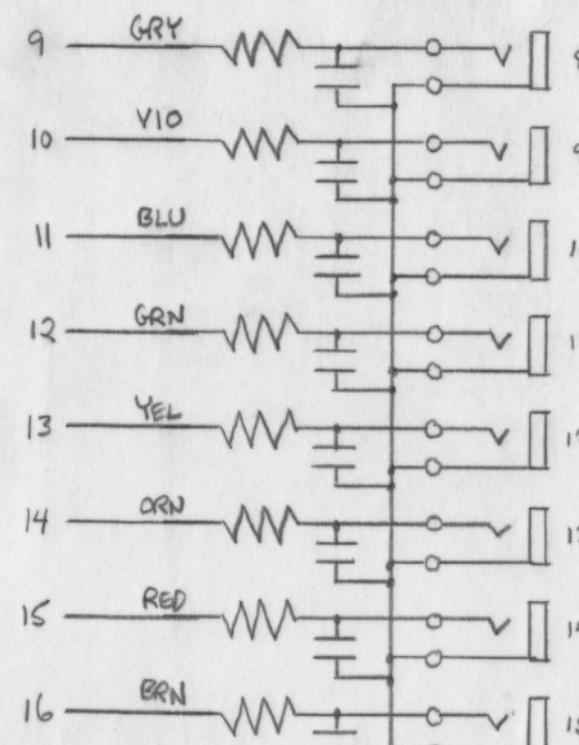
D/A OUTPUT PANEL

(MINIATURE PHONE JACKS)

16-PIN DIP PLUG, ALL RESISTORS 1K ohms

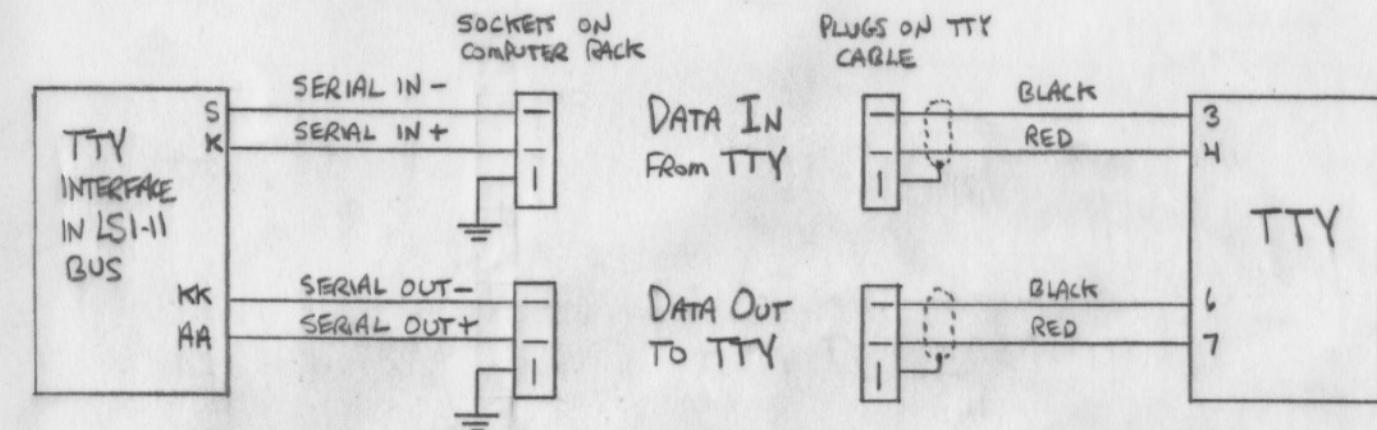


16 PIN DIP PLUG, ALL CAPACITORS .01uf



GROUNDED DIRECTLY TO D/A BOARD

TTY CONNECTIONS (OBSOLETE 7/18)



EXPERIMENTAL TV CENTER, LTD.

BINGHAMTON, N.Y.

COMPUTER PROJECT

MISC. RACK WIRING
9/77 R.B.

ELEMENT BUS

1	+9V	51	+9V
2	+19V	52	-19V
3	XRDY	53	<u>SSW DSB</u>
4	<u>Q1</u>	54	EXT CLR
5	<u>Q2</u>	55	
6	<u>Q3</u>	56	BYTE
7	<u>ETF</u>	57	DI08
8	<u>CEM</u>	58	DI09
9	<u>CME</u>	59	DI010
10	<u>FTE</u>	60	DI011
11	<u>TR (VDTTL)</u>	61	DI012
12	X CLOCK	62	DI013
13	X LOAD	63	DI014
14	Y CLOCK	64	DI015
15	Y LOAD	65	
16	HDTTL	66	SCTTL
17		67	
18	<u>STA DSB</u>	68	MWRT
19	<u>C/C DSB</u>	69	PS
20	UNPROT	70	PROT
21	SS	71	RUN
22	<u>ADD DSB</u>	72	PRDY
23	<u>DO DSB</u>	73	PINT
24	Q2	74	PHOLD
25	Q1	75	PRESET
26	<u>PHLDA</u>	76	PSYNC
27	PWAIT	77	WE
28	PINTE	78	RE
29	A5	79	A0
30	A4	80	A1
31	A3	81	A2
32	A15	82	A6
33	A12	83	A7
34	A9	84	A8
35	D1	85	A13
36	D0	86	A14
37	A10	87	A11
38	D4	88	D2
39	D5	89	D3
40	D6	90	D7
41	DI2	91	DI4
42	DI3	92	DI5
43	DI7	93	DI6
44	SM1	94	DI1
45	SOUT	95	DI0
46	SINP	96	SINTA
47	SMEMR	97	SWO
48	SHLTA	98	S STACK
49	CLOCK	99	POC
50	GND	100	GND

DON SIGNALS

<u>Q1</u>	{	From BUFFER MEMORY
<u>Q2</u>		
<u>Q3</u>		
<u>CEM</u>		
<u>CME</u>	{	From BUS INDICATOR
<u>ETF</u>		
<u>FTE</u>	{	- FROM CLOCK
<u>TR</u>		

A0 - A9

D0 - D7

DI08 - DI015

JEFF SIGNALS

X CLOCK
X LOAD
Y CLOCK
Y LOAD
HDTTL
SCTTL
<u>WE (PWR)</u>
<u>RE (INVERSE PDBIN)</u>
BYTE

NOTES

- ① PIN 17 CARRIES NEGATIVE GOING V.D.,
~~TR~~ IS THE SAME AS ~~VDTTL~~.
- ② D0 - D7 ARE DATA OUT FOR ALTAIR, AND
DATA IN-OUT FOR DON'S SYSTEM.
- ③ SIGNALS OTHER THAN DON'S OR JEFF'S ARE
TAKEN FROM THE ALTAIR 8800 BUS STRUCTURE.
- ④ PINS 4-11 ARE DESIGNATED "VECTORED
INTERRUPT LINES" IN THE ALTAIR BUS.
- ⑤ Q1 AND Q2 ARE DON SIGNALS THAT ARE
UNRELATED TO Q1 AND Q2 ALTAIR SIGNALS.

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT 9/77

ELEMENT BUS

R.B.

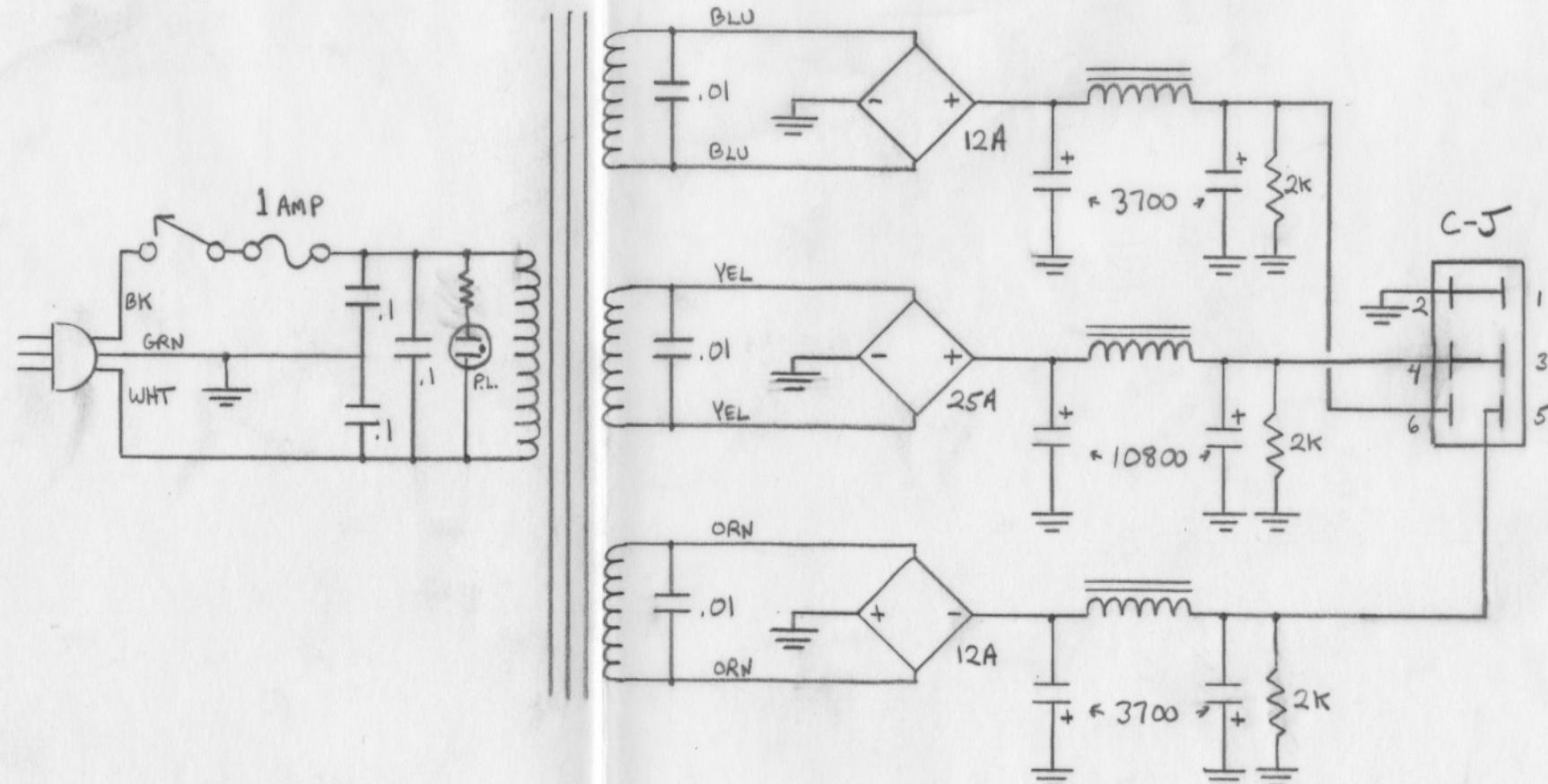
EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y. 13901
COMPUTER PROJECT
ELEMENT BUSS POWER SUPPLY
6/77 RICH BREWSTER
PAGE 1 OF 1

PARTS LIST :

TRANSFORMER - BASLER BE12696-00
2 BRIDGE RECTIFIERS 200 PIV 12 AMP
1 BRIDGE RECTIFIER 400 PIV 25 AMP
3 CHOKES, 20 Amp, $\leq .05$ ohm
4 CAPACITORS, 3700 MFD AT 75V
2 CAPACITORS, 10800 MFD AT 20V
3 RESISTORS, 2000 ohm 1/2 WATT
1 FUSE HOLDER w/ 1AMP SLO-BLO FUSE
3 CAPACITORS, .01 MFD 100V MYLAR
3 CAPACITORS, .1 MFD 600V
1 NEON PILOT LAMP ASSEMBLY
1 S.P.S.T. TOGGLE SWITCH, 6 AMP 120V
1 LINE CORD, 3 WIRE, 120V
1 CINCH-JONES CONNECTOR, 6 PIN,
CHASSIS MOUNTED FEMALE
1 ALUMINUM CHASSIS 3" x 7" x 15"

CABLE PARTS

1 C-J MALE, CABLE MOUNT, 6 PIN
1 C-J FEMALE, CABLE MOUNT, 6 PIN
10' 7-CONDUCTOR, 18 GAUGE CABLE



CONNECTOR, CABLE, VOLTAGE, CURRENT

1, 2	BLK, GRN, BRN	GND	
3, 4	WHT, RED	+9V	6
5	BLU *	-19V	2
6	ORN *	+19V	2

* NOTE - THESE ARE THE CABLE COLORS, WHICH ARE THE
TRANSFORMER LEADS WHICH HAPPEN TO BE THE OPPOSITE COLORS.

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT 9/77 R.B.
BUFFER MEMORY, PAGE 2 OF 3

PARTS LIST:

1 VECTOR 8800V UNIVERSAL 100-PIN PLUGBOARD
 38 16-PIN DIP WIRE WRAP SOCKETS
 10 14-PIN " " " "
 1 24-PIN " " " "
 4 HEAT SINKS
 1 BERG H-854 40-PIN CONNECTOR
 2 LM340T-5 REGULATOR
 4 SN7400N QUAD 2-INPUT NAND
 2 SN7402N QUAD 2-INPUT NOR
 1 SN7404N HEX INVERTER
 1 SN74S04N SCHOTTKY HEX INVERTER
 1 SN7430N 8-INPUT NAND
 1 SN7474N DUAL D FLIP FLOP
 1 SN74154N 4-LINE TO 16 LINE DECODER
 3 SN74157N QUAD 2:1 DATA SELECTOR
 4 SN74161N ASYNCHRONOUS 4-BIT COUNTER
 8 DM8097N TRI-STATE HEX BUFFER
 6 N8T97N HIGH-SPEED TRI-STATE HEX BUFFER
 1 DM8160N 6-BIT COMPARATOR
 16 21L02 LOW POWER 1024x1 STATIC RAM
 2 22 μ F 25V ELECTROLYTIC CAPACITORS
 2 10 μ F 50V "
 12 .1 μ F 35V TANTALUM "
 .01 μ F 100V MYLAR "
 .002 μ F " DISK "
 .001 μ F "
 1 330 pF " SILVER MICA "
 2 51 Ω 1/4 WATT RESISTORS
 3 100 Ω "
 3 1K "
 3 10K "

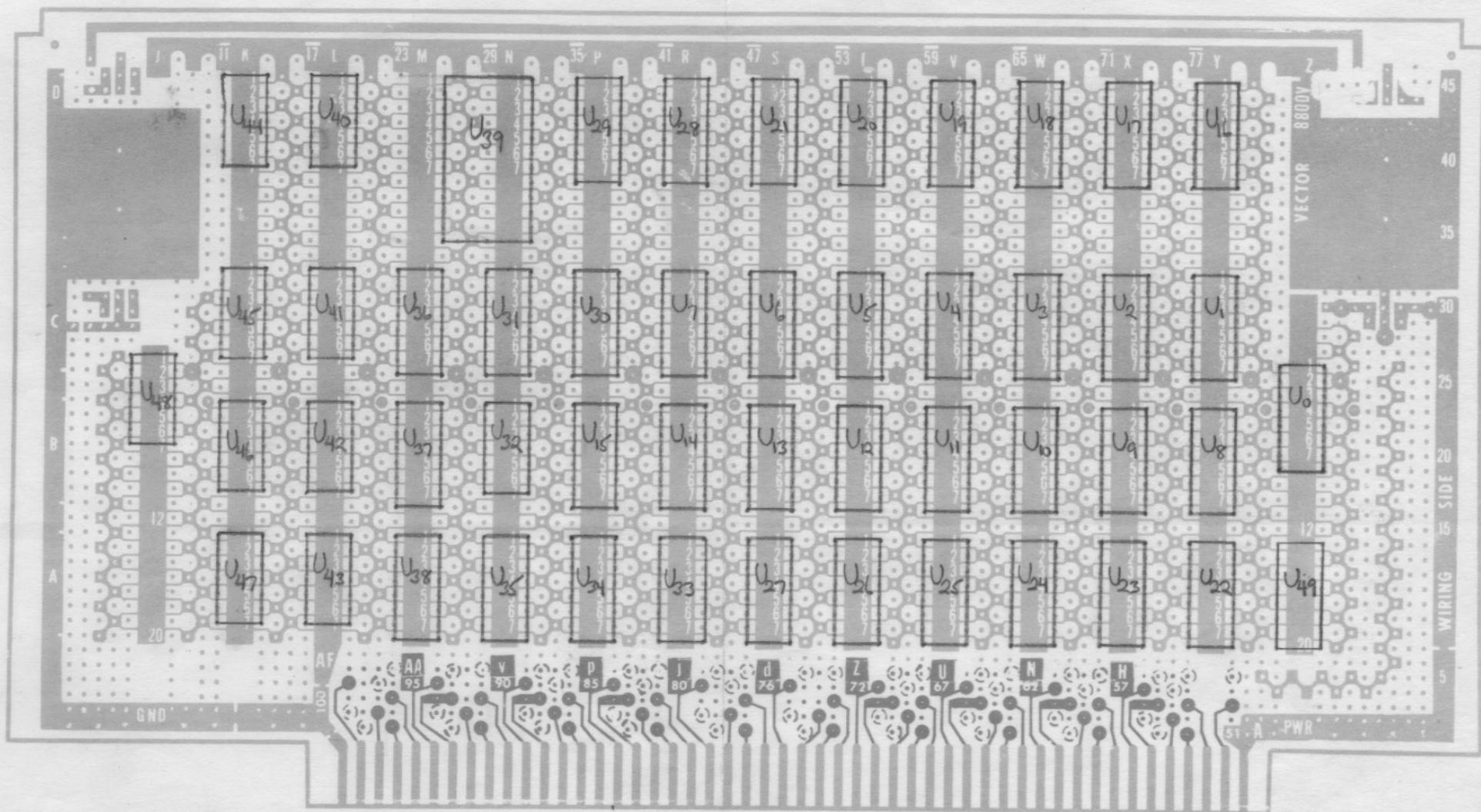
POWER CONSUMPTION:

+9VDC @

NUMBER	CHIP	LOCATION	Vcc PIN	GND PIN
U ₀	21L02	BC2	10	9
U ₁	21L02	CY	10	9
U ₂	21L02	CX	10	9
U ₃	21L02	CW	10	9
U ₄	21L02	CV	10	9
U ₅	21L02	CT	10	9
U ₆	21L02	CS	10	9
U ₇	21L02	CR	10	9
U ₈	21L02	BY	10	9
U ₉	21L02	BX	10	9
U ₁₀	21L02	BW	10	9
U ₁₁	21L02	BV	10	9
U ₁₂	21L02	BT	10	9
U ₁₃	21L02	BS	10	9
U ₁₄	21L02	BR	10	9
U ₁₅	21L02	BP	10	9
U ₁₆	8097	DY	16	8
U ₁₇	8097	DX	16	8
U ₁₈	8097	DW	16	8
U ₁₉	8T97	DV	16	8
U ₂₀	8T97	DT	16	8
U ₂₁	8T97	DS	16	8
U ₂₂	8097	AY	16	8
U ₂₃	8097	AX	16	8
U ₂₄	8097	AW	16	8
U ₂₅	8T97	AV	16	8
U ₂₆	8T97	AT	16	8
U ₂₇	8T97	AS	16	8
U ₂₈	74157	DR	16	8
U ₂₉	74157	DP	16	8
U ₃₀	74157	CP	16	8
U ₃₁	8160	CN	16	8
U ₃₂	7430	BN	14	7
U ₃₃	8097	AR	16	8
U ₃₄	8097	AP	16	8
U ₃₅	74161	AN	16	8
U ₃₆	74161	CM	16	8
U ₃₇	74161	Bm	16	8
U ₃₈	74161	AM	16	8
U ₃₉	74154	DNM	24	12
U ₄₀	7400	DL	14	7
U ₄₁	7400	CL	14	7
U ₄₂	7400	BL	14	7
U ₄₃	7400	AL	14	7
U ₄₄	7404	DK	14	7
U ₄₅	7402	CK	14	7
U ₄₆	7402	BK	14	7
U ₄₇	74\$04	AK	14	7
U ₄₈	7474	BCJ	14	7

BERG H-854 WIRING VIEW			
SIGNAL	PIN	SIGNAL	
GND	B	A	GND
D ₁₅	D	C	D ₁₄
D ₁₃	F	E	D ₁₂
D ₁₁	J	H	D ₁₀
D ₉	L	K	D ₈
D ₇	N	M	D ₆
D ₅	R	P	D ₄
D ₃	T	S	D ₂
D ₁	V	U	D ₀
GND	X	W	GND
A ₁₀	Z	Y	A ₉
A ₈	BB	AA	A ₇
A ₆	DD	CC	A ₅
A ₄	FF	EE	A ₃
A ₂	JJ	HH	A ₁
R	LL	KK	S
T	NN	MM	READY
SXB	RR	PP	INIT
SPARE	TT	SS	SPARE
GND	VV	UU	GND

BUFFER MEMORY



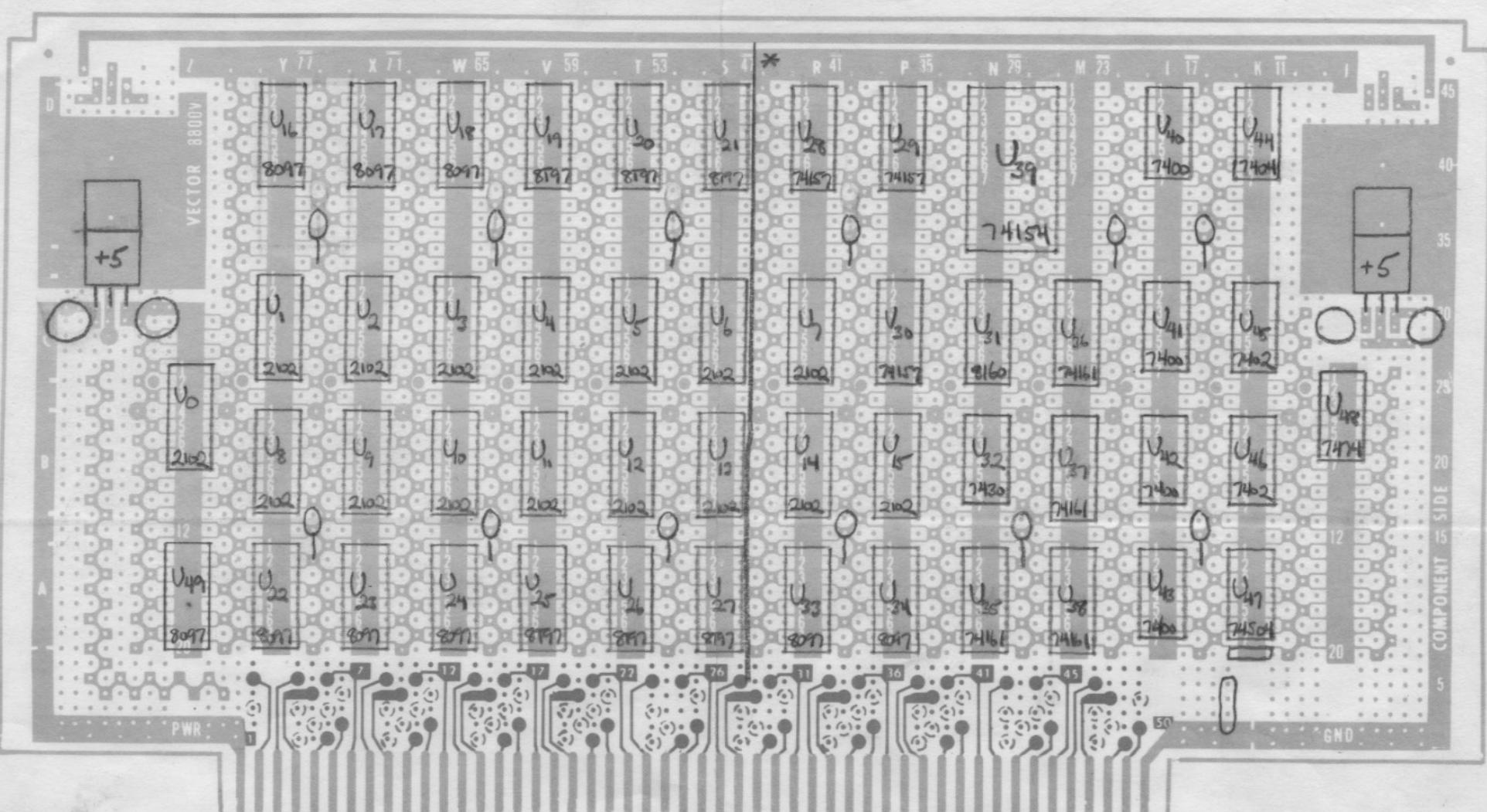
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4. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE
3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD
2. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS
1. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS

VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

BUFFER MEMORY



E.T.C., LTD.
BINGHAMTON, N.Y.
9/77 R.B.
PAGE 3 OF 3

NOTES:

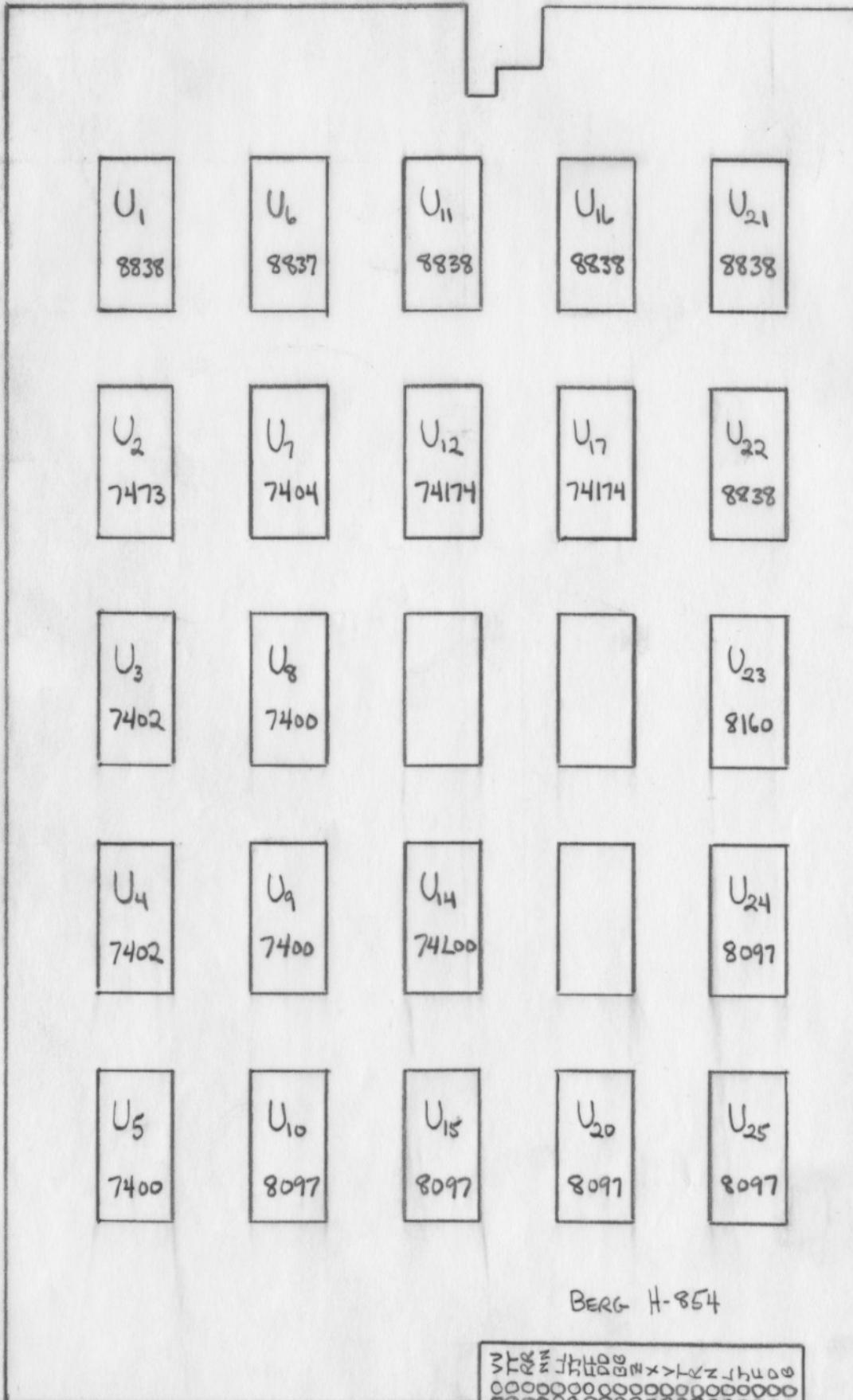
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* POWER PLANE CUT TO SEPARATE OUTPUTS FROM TWO +5V REGULATORS

VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
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SYLMAR, CALIFORNIA 91342

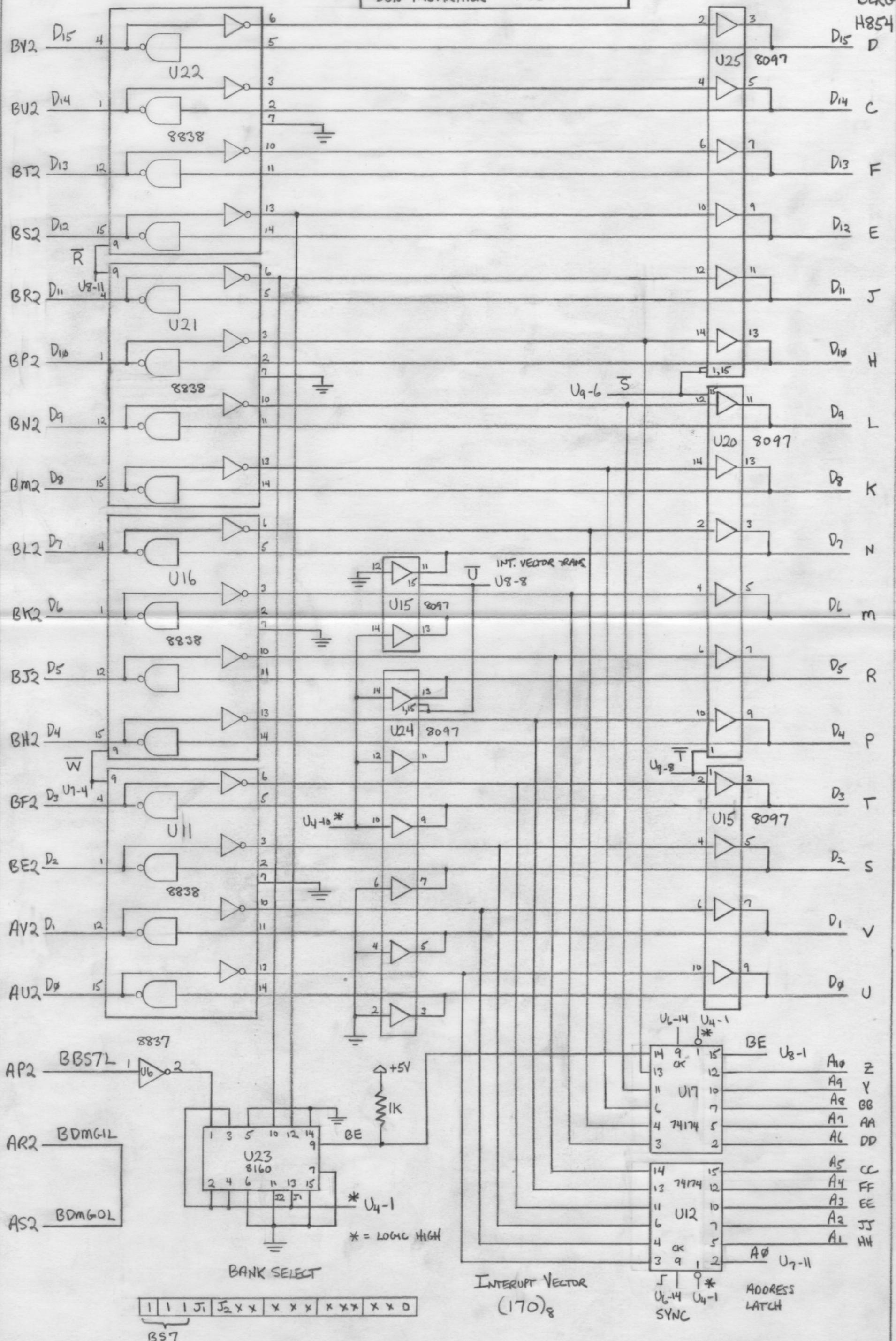
COMPONENT SIDE

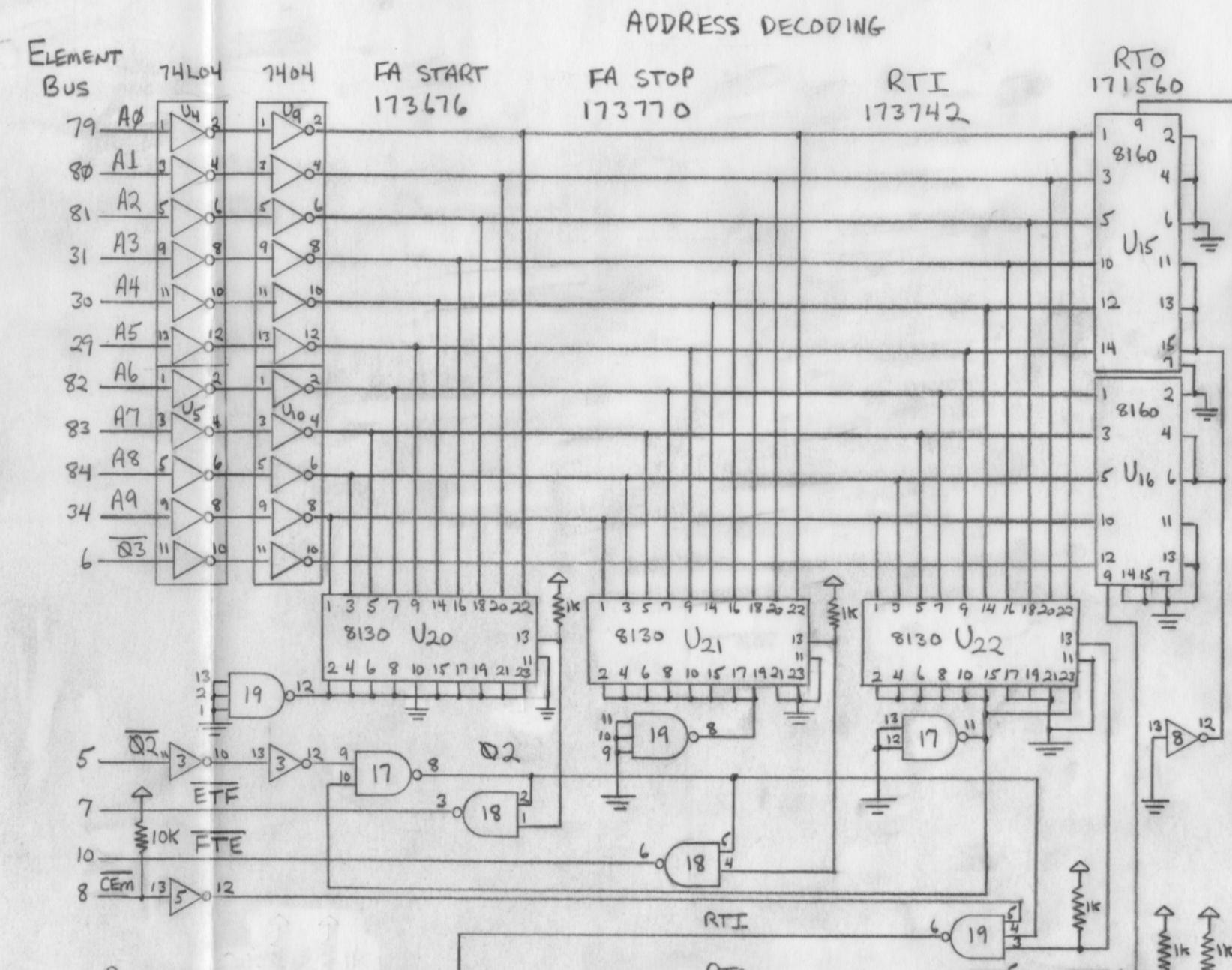
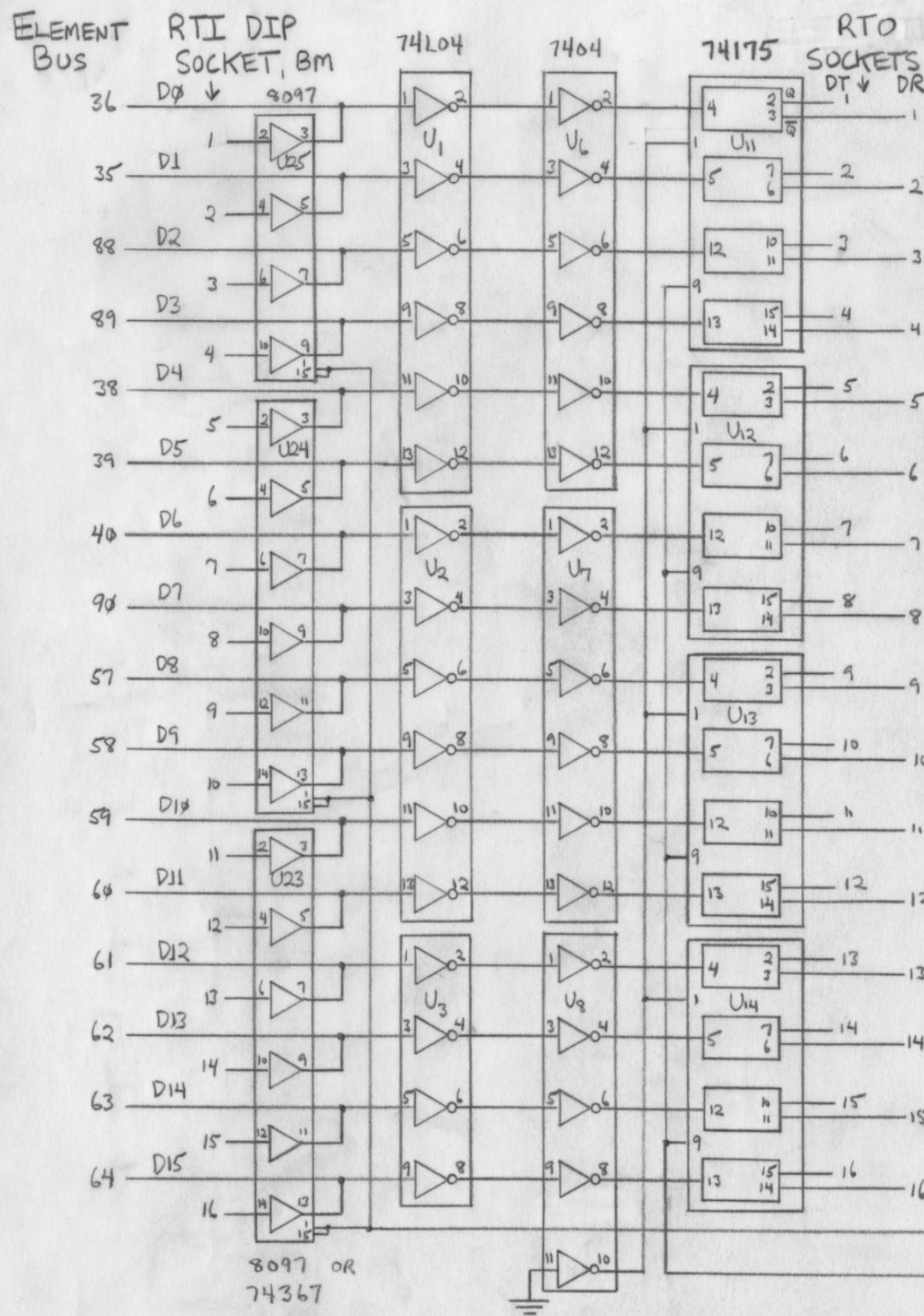


PARTS LIST

QUANTITY	DESCRIPTION	V _{CC} PIN	GND PIN
4	SN 7400N QUAD 2-INPUT NAND	14	7
2	SN 7402N QUAD 2-INPUT NOR	14	7
1	SN 7404N HEX INVERTER	14	7
1	SN 7473N DUAL JK MASTER/SLAVE FLIP FLOP	4	11
2	SN 74174N HEX D FLIP FLOP WITH CLEAR	16	8
5	DM 8097N TRI-STATE HEX BUFFER	16	8
1	DM 8160N 6-BIT COMPARATOR	16	8
1	DM 8837N HEX UNIFIED BUS RECEIVER	16	8
5	DM 8838N QUAD UNIFIED BUS TRANSCLEVER	16	8
1	DIGITAL W943 PROTOBOARD		
1	BERG H854 CONNECTOR		
1	IN 270 GERMANIUM DIODE		
200 Ω	1/4 WATT RESISTOR		
470 Ω	" "		
1K	" "		
22K	" "		
.01uf	DISK CAPACITOR		
.0027uf	" "		

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT
PARALLEL INTERFACE
DON McARTHUR 1/77
PAGE 1 OF 3 R.B.





R SOCKET TO LED PANEL

T SOCKET TO PARALLEL OUTPUT

CLIP TERM TO PARALLEL OUTPUT

— ORN

$$\uparrow = +5VDC$$

EXPERIMENTAL TV CENTER, LTD.

BINGHAMTON, N.Y.

COMPUTER PROJECT :

Bus Indicator Board, Page 1 of 3

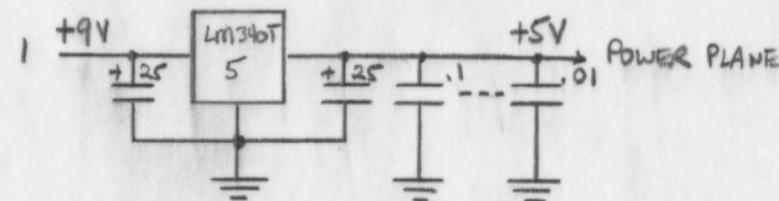
Don McArthur 8/77

R. B.

UPDATED 12/18 - R.B.

PARTS LIST

1	VECTOR 8800V UNIVERSAL 100-PIN PLUGBOARD
12	16-PIN DIP WIRE WRAP SOCKETS
13	14-PIN DIP " " "
3	24-PIN DIP " " "
1	HEAT SINK FOR REGULATOR
1	LM340T-5 REGULATOR
1	2N3904 NPN TRANSISTOR
1	SN7400N QUAD 2-INPUT NAND
1	SN7403N QUAD 2-INPUT NAND, OPEN COLLECTOR
1	SN7410N TRIPLE 3-INPUT NAND
5	SN7404N HEX INVERTER
5	SN74L04N HEX INVERTER
4	SN74175N QUAD D FLIP FLOP
3	DM8097N TRI-STATE HEX BUFFER
3	DM8130N 10-BIT COMPARATOR
2	DM8160N 6-BIT COMPARATOR
3	.22uf 25V ELECTROLYTIC CAPACITOR
3	.1uf 35V TANTALUM CAPACITOR
10	.01uf 100V MYLAR CAPACITOR
6	1K 1/4 WATT RESISTOR
1	2K 1/4 WATT RESISTOR
1	20K 1/4 WATT RESISTOR



NUMBER	CHIP	LOCATION	V _{cc} PIN	GND PIN
U ₁	74L04	AV	14	7
U ₂	74L04	AT	14	7
U ₃	74L04	AS	14	7
U ₄	74L04	AR	14	7
U ₅	74L04	AP	14	7
U ₆	7404	BV	14	7
U ₇	7404	BT	14	7
U ₈	7404	BS	14	7
U ₉	7404	BR	14	7
U ₁₀	7404	BP	14	7
U ₁₁	74175	CW	16	8
U ₁₂	74175	CV	16	8
U ₁₃	74175	CT	16	8
U ₁₄	74175	CS	16	8
U ₁₅	8160	CR	16	8
U ₁₆	8160	CP	16	8
U ₁₇	7400	CN	14	7
U ₁₈	7403	CM	14	7
U ₁₉	7410	CL	14	7
U ₂₀	8130	DPN	24	12
U ₂₁	8130	DNM	24	12
U ₂₂	8130	DML	24	12
U ₂₃	8097	AN	16	8
U ₂₄	8097	AM	16	8
U ₂₅	8097	AL	16	8

BUFFER MEMORY ADDRESS MAP

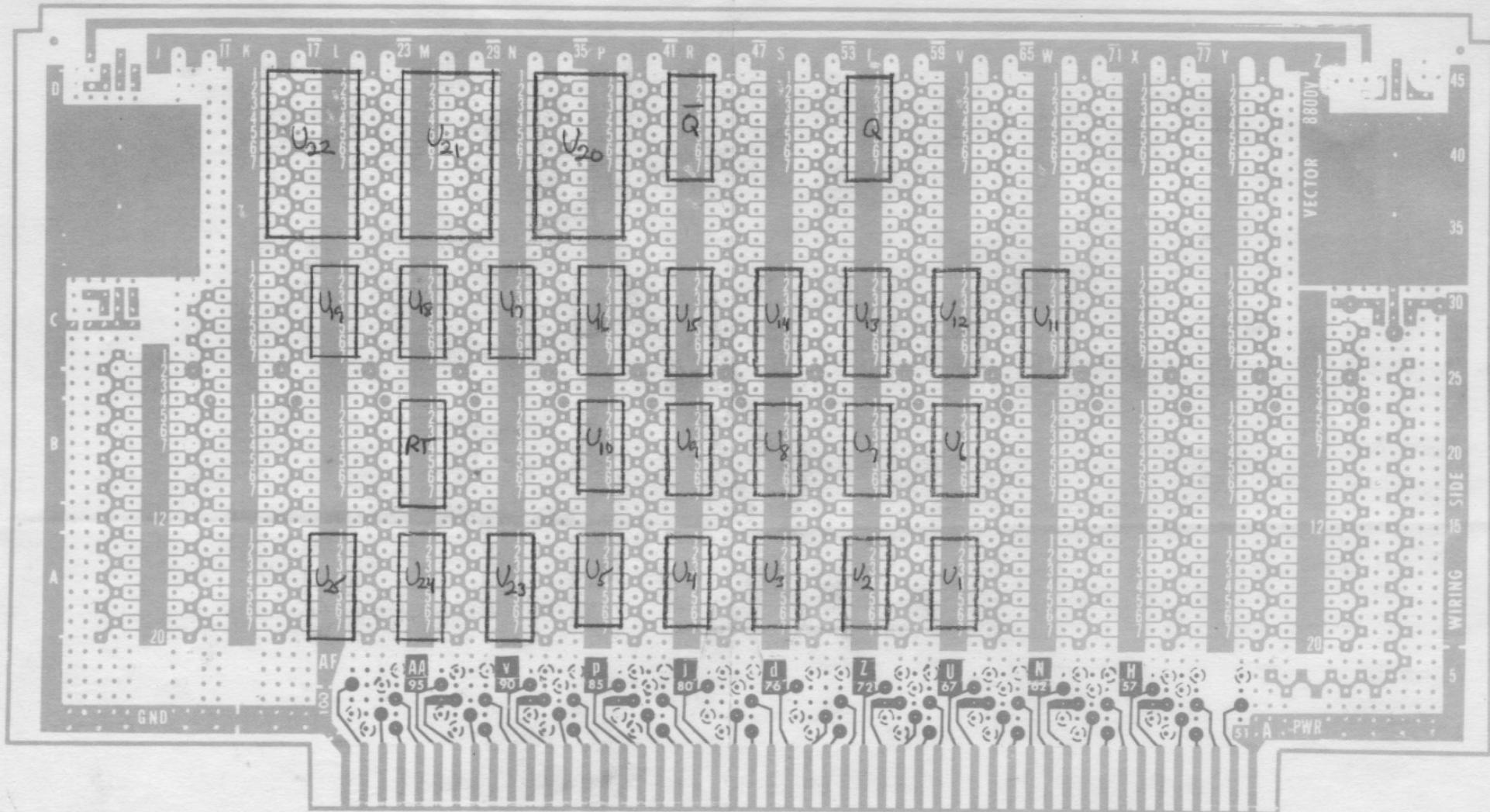
170000	
170040	16 D/A'S
170076	
171560	BUS INDICATOR (U ₁₅ , U ₁₆)
173676	
173742	F.A. START (U ₂₀) REAL TIME INPUT (U ₂₂)
173770	F.A. STOP (U ₂₁)
173776	STATUS REGISTER

THE FOUR CIRCUITS ON THE BUS INDICATOR CARD

- ① BUS INDICATOR CIRCUIT
- ② BUFFER MEMORY MODE CONTROLLER
- ③ REAL-TIME INPUT CIRCUIT
- ④ V.D. TO TTL CONVERTER

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT
BUS INDICATOR BOARD 8/77
DON McARTHUR
PAGE 2 OF 3 R.B.

BUS INDICATOR



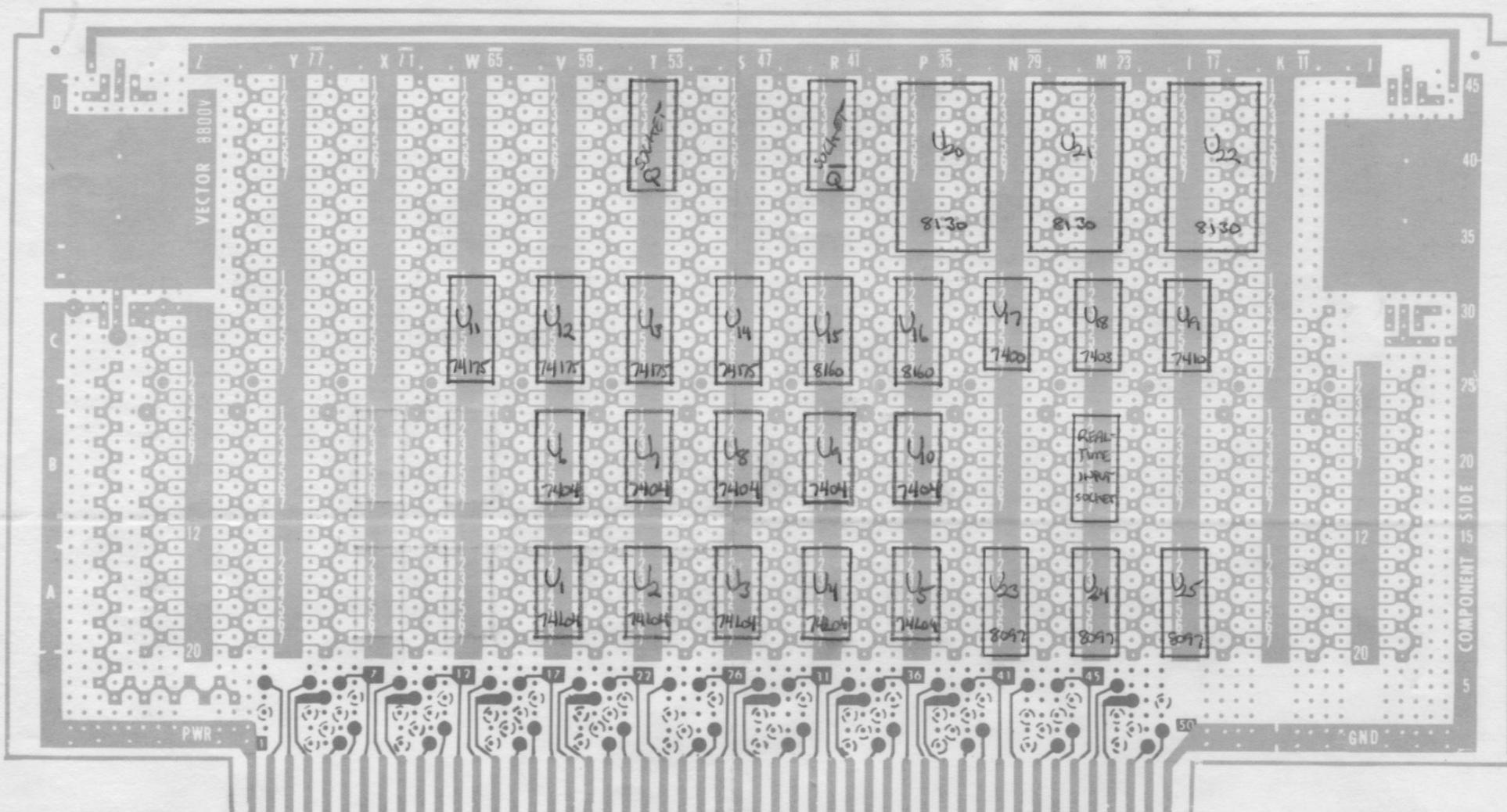
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2. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS
1. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS

VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
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SYLMAR, CALIFORNIA 91342

BUS INDICATOR



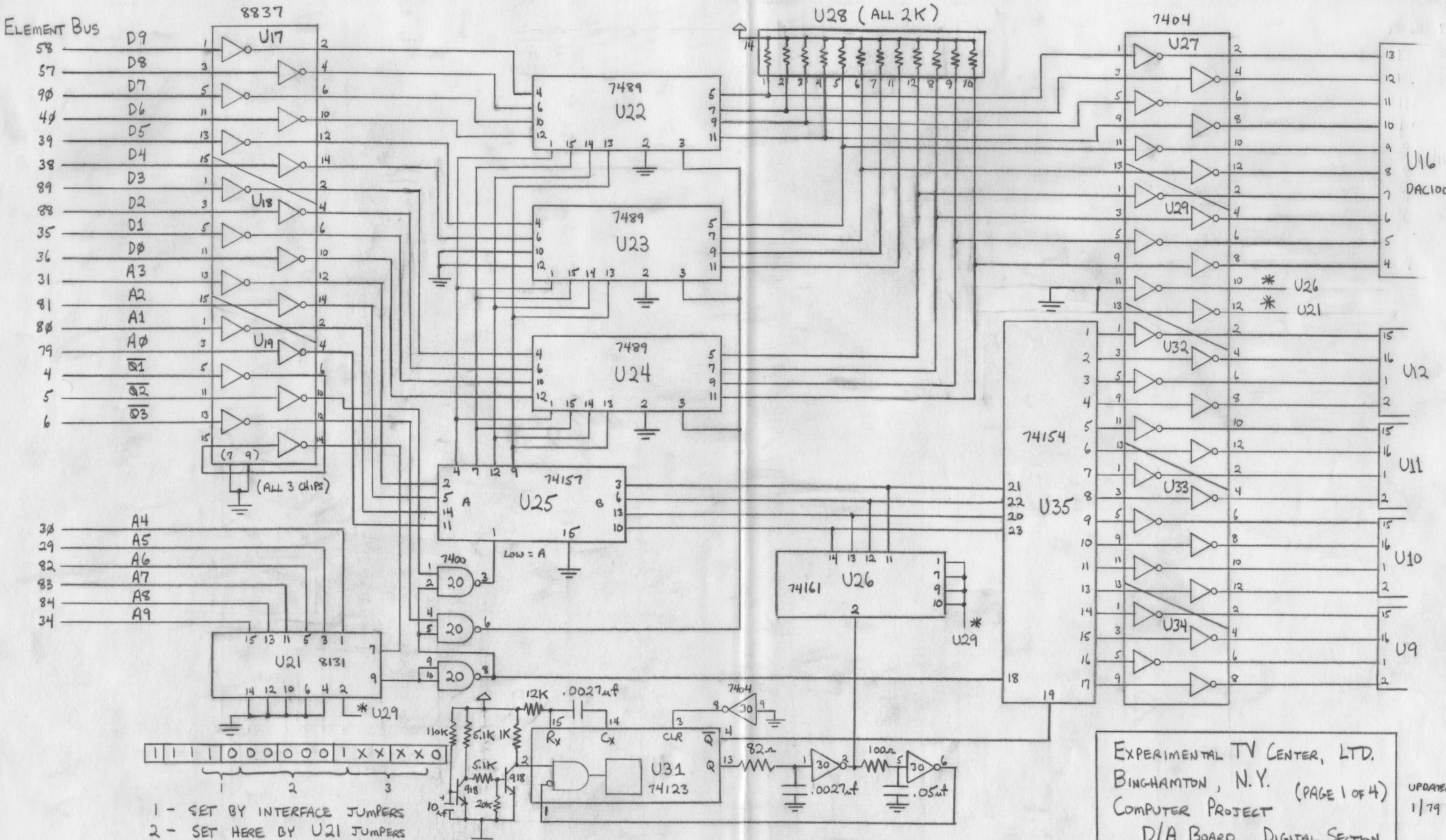
ET.C., LTD.
BINGHAMTON, N.Y.
8/77 R.B.
PAGE 3 OF 3

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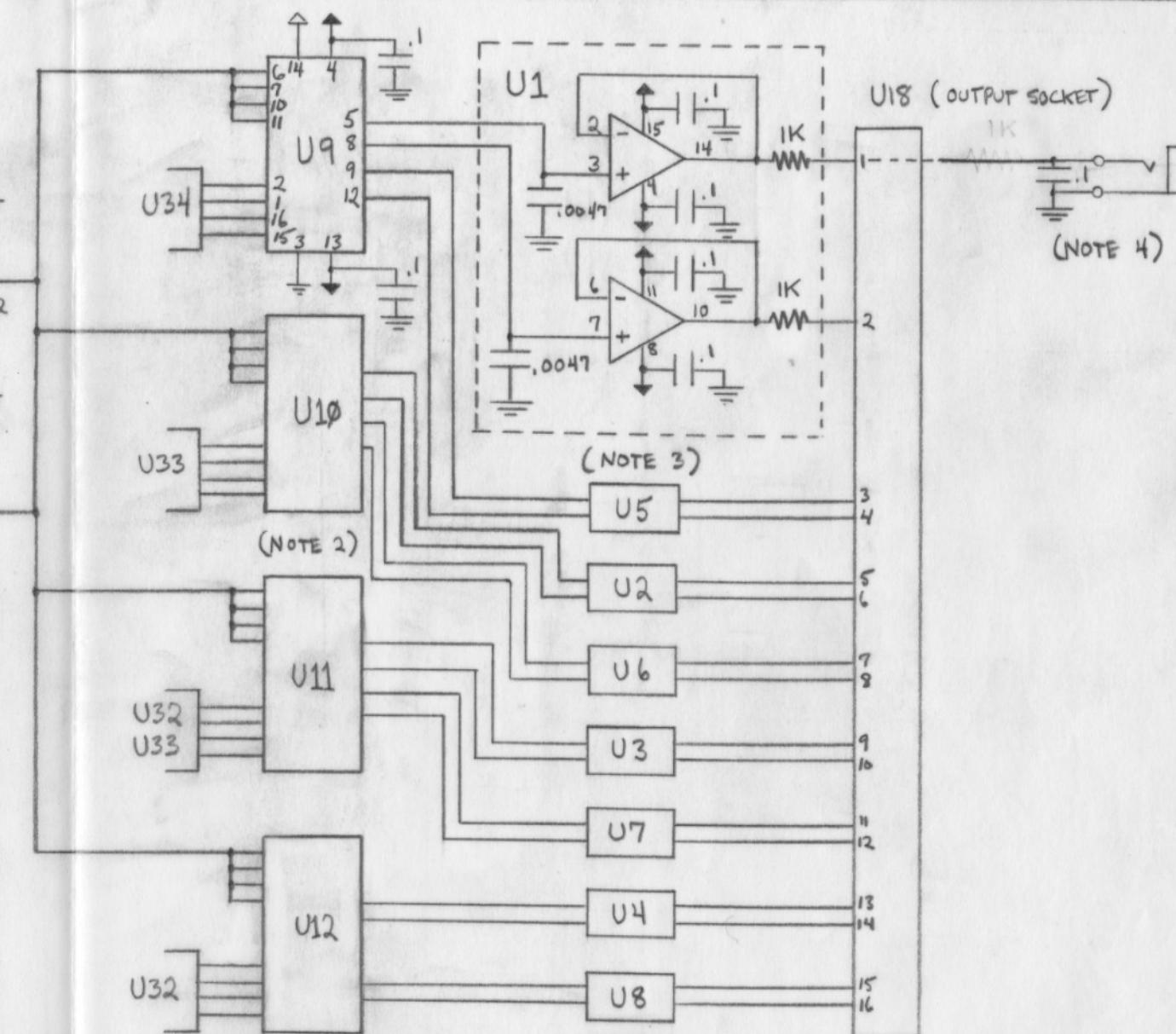
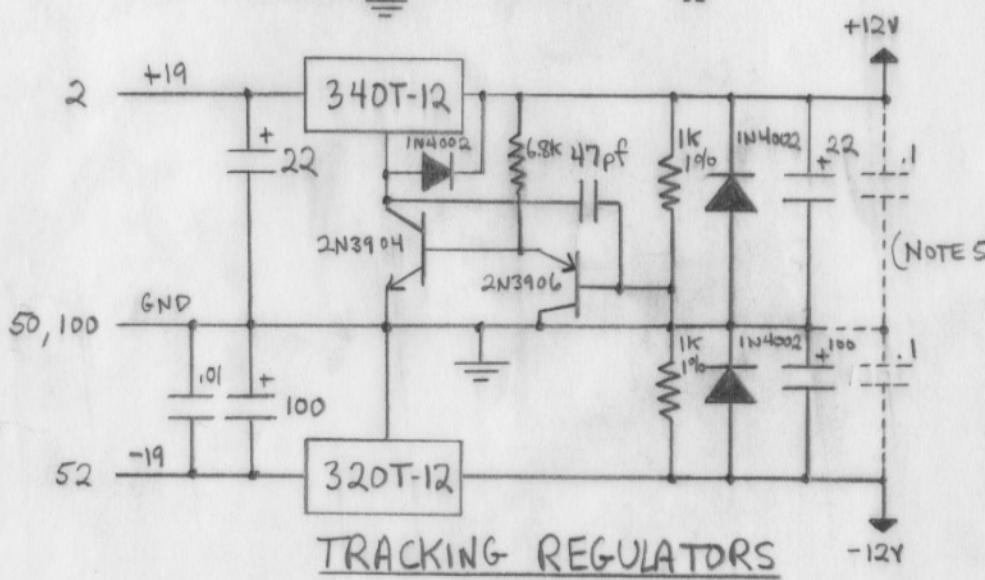
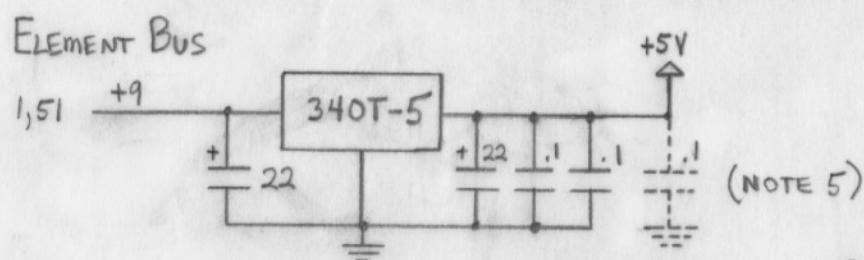
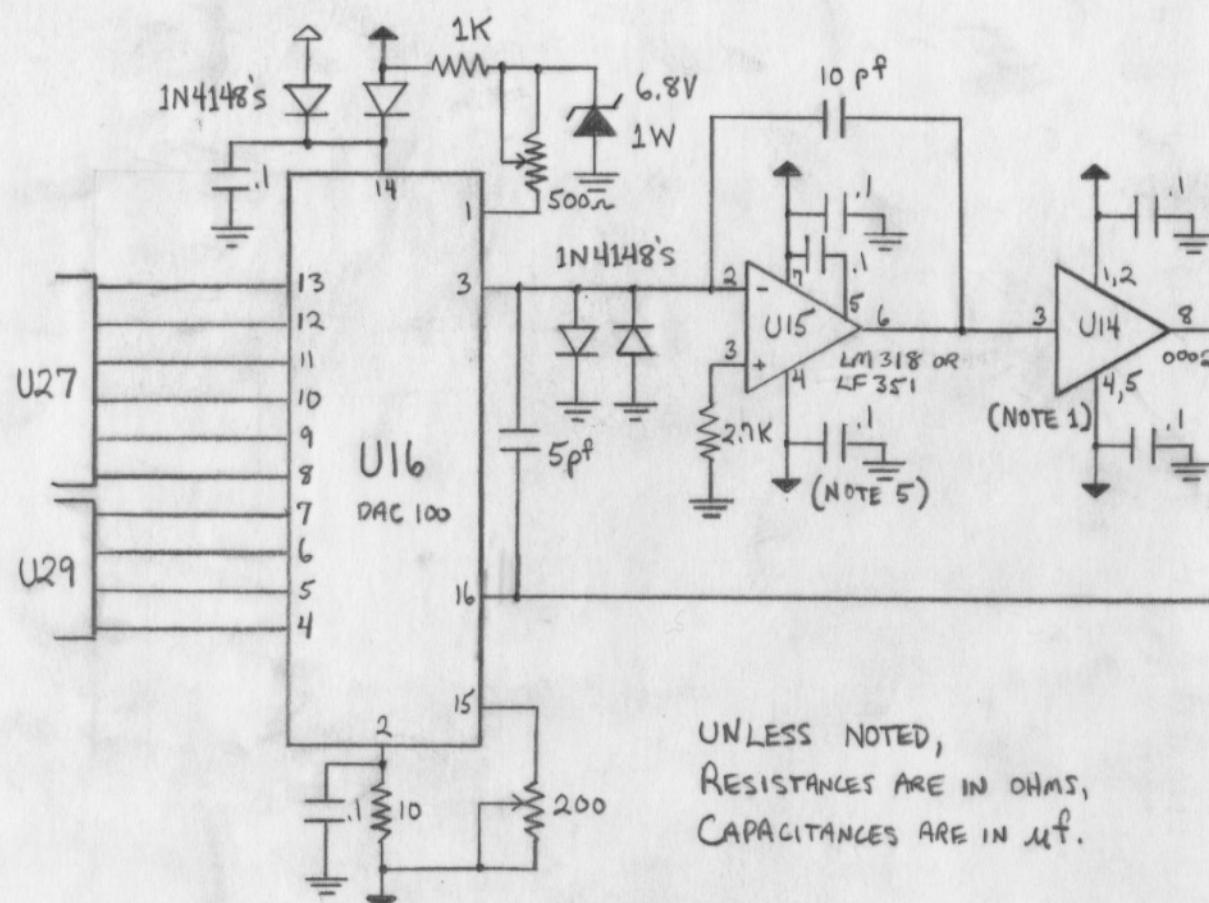
VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
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EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y. (PAGE 1 OF 4)
 COMPUTER PROJECT
 D/A BOARD, DIGITAL SECTION
 DON McARTHUR 8/77 R.B.

UPDATED
 1/79



NOTES :

- 1) U14 (LH0002CN) IS A 10-PIN DIP.
- 2) U10-U12 ARE CONFIGURED SIMILARLY TO U9, AH0015.
- 3) U2-U8 ARE CONFIGURED SIMILARLY TO U1, WHICH CONSISTS OF 2 LM307N CHIPS IN ONE 16-PIN SOCKET.
- 4) SEE DESCRIPTION OF D/A OUTPUT PANEL.
- 5) 1μ F TANTALUM CAPACITORS ARE PLACED CLOSE TO POWER SUPPLY PINS OF ALL ANALOG CHIPS.

EXPERIMENTAL TV CENTER, LTD
BINGHAMTON, N.Y.
COMPUTER PROJECT
D/A BOARD (PAGE 2 OF 4)
ANALOG SECTION
DON McARTHUR 8/77 R.B.

UPDATED 1/79

PARTS LIST

1 VECTOR 8800V UNIVERSAL 100-PIN PLUG-BOARD
 26 16-PIN DIP WIRE WRAP SOCKETS
 8 14-PIN DIP " " "
 1 24-PIN DIP
 3 HEAT SINKS
 1 LM340T-5 VOLTAGE REGULATOR CHIP
 1 LM340T-12 " " "
 1 LM320T-12 " " "
 1 2N3904 TRANSISTOR (NPN)
 1 2N3906 " (PNP)
 1 IN4148 DIODES
 3 IN4002 DIODES
 1 6.8V 1 WATT ZENER DIODE
 1 SN7400N QUAD 2-INPUT NAND
 6 SN7404N HEX INVERTER
 3 SN7489N 64-BIT RAM
 1 SN74123N MONOSTABLE MULTIVIBRATOR
 1 SN74154N 4-LINE TO 16-LINE DEMULTIPLEXER
 1 SN74157N QUAD 2:1 DATA SELECTOR
 1 SN74161N BINARY COUNTER
 1 DM8131N 6-BIT UNIFIED BUS COMPARATOR
 3 DM8837N HEX UNIFIED BUS RECEIVER
 1 DAC100 10-BIT D/A
 1 LM318N HIGH SPEED OP AMP
 1 LH0002CN CURRENT AMP
 3 AH0015CD QUAD ANALOG SWITCH
 16 LM307N OP AMP

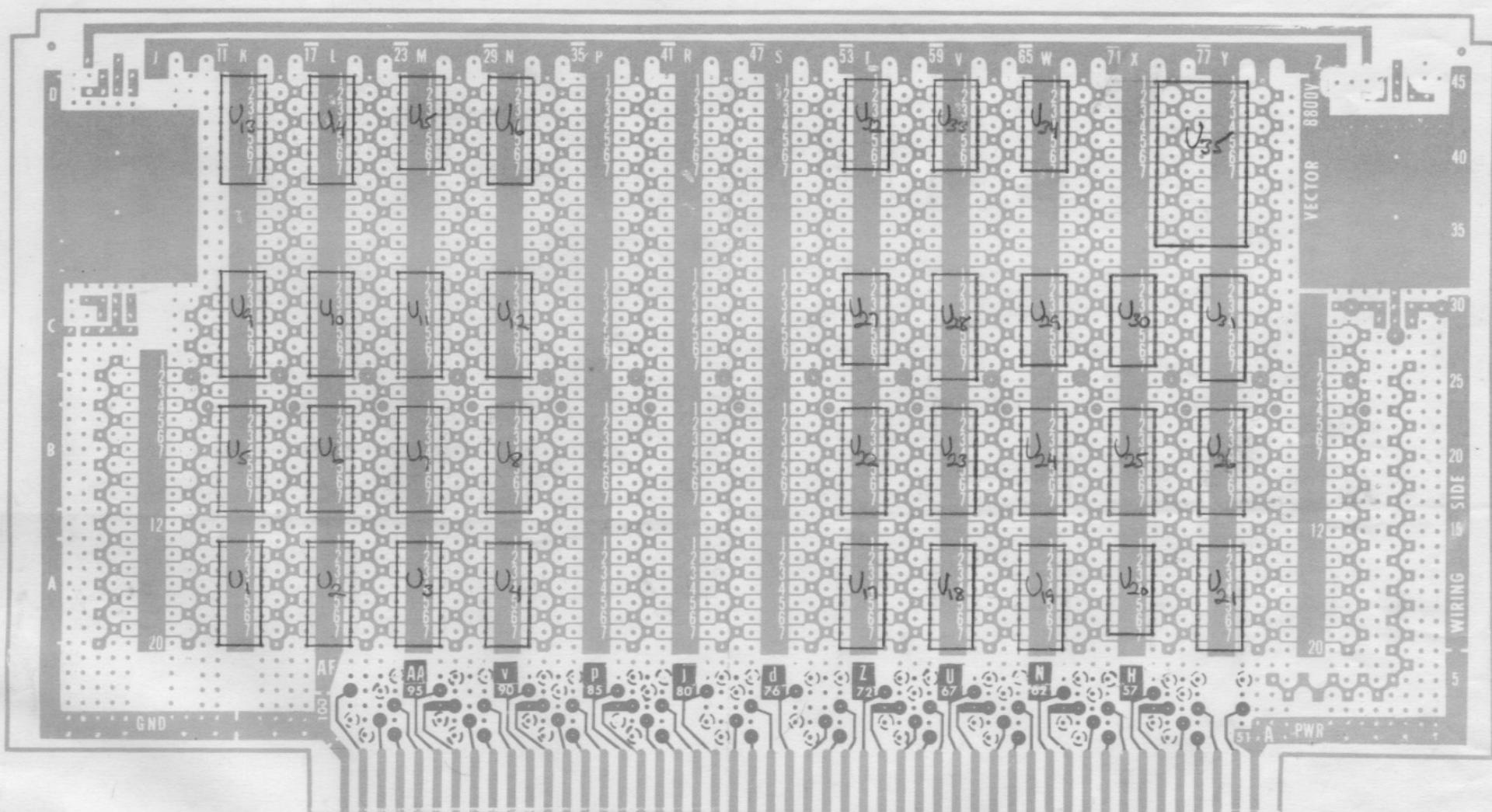
CAPACITORS

2 100 μ F 25V ELECTROLYTIC 2 1K $\frac{1}{2}$ WATT 1%
 4 22 μ F 25V " 1 12K $\frac{1}{4}$ WATT 5%
 1 1 μ F 50V " 1 10K "
 38 .1 μ F 35V TANTALUM 1 6.8K "
 1 .05 μ F DISK 1 2.7K "
 1 .01 μ F MYLAR 1 1K "
 16 .0047 μ F " 1 100 μ " "
 2 .0027 μ F DISK 1 82 μ "
 1 47pf " 1 10 μ "
 1 10pf " 1 500 μ TRIMPOT
 1 5pf " 1 200 μ "

RESISTORS

	<u>NUMBER</u>	<u>CHIP</u>	<u>LOCATION</u>	<u>+12 PIN</u>	<u>-12 PIN</u>	<u>+5PIN</u>	<u>GND PIN</u>
	U1	2-307	AK	11, 15	4, 8		
	U2	2-307	AL	11, 15	4, 8		
	U3	2-307	AM	11, 15	4, 8		
	U4	2-307	AN	11, 15	4, 8		
	U5	2-307	BK	11, 15	4, 8		
	U6	2-307	BL	11, 15	4, 8		
	U7	2-307	BM	11, 15	4, 8		
	U8	2-307	BN	11, 15	4, 8		
	U9	AH0015	CK	4	13	14	3
	U10	AH0015	CL	4	13	14	3
	U11	AH0015	CM	4	13	14	3
	U12	AH0015	CN	4	13	14	3
	U13	OUTSOCKET	DK				
	U14	LH0002	DL	1, 2	4, 5		
	U15	LM318	DM	7	4		
	U16	DAC100	DN	14	2		
	U17	8837	AT			16	8
	U18	8837	AV			16	8
	U19	8837	AW			16	8
	U20	7400	AX			14	7
	U21	8131	AY			16	8
	U22	7489	BT			16	8
	U23	7489	BV			16	8
	U24	7489	BW			16	8
	U25	74157	BX			16	8
	U26	74161	BY			16	8
	U27	7404	CT			14	7
	U28	PULL-UPS	CV			16	
	U29	7404	CW			14	7
	U30	7404	CX			14	7
	U31	74123	CY			16	8
	U32	7404	DT			14	7
	U33	7404	DV			14	7
	U34	7404	DW			14	7
	U35	74154	DX			24	12

EXPERIMENTAL TV CENTER, LTD., BINGHAMTON, N.Y.
 COMPUTER PROJECT : D/A BOARD (PAGE 3 OF 4)
 DON MC ARTHUR 8/77 R. B.



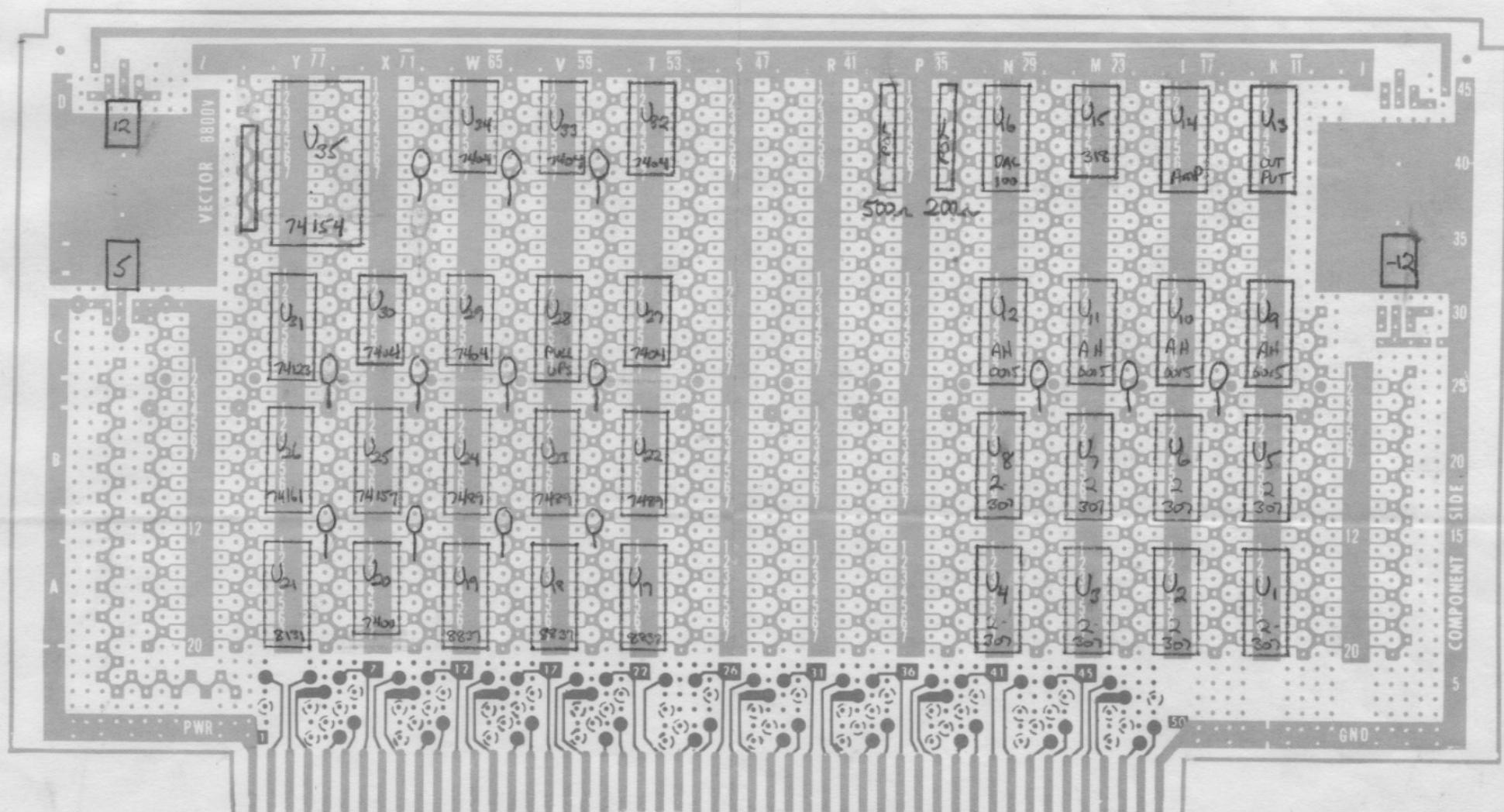
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A diagram of a power terminal block. It shows two vertical columns of four circular terminals each. The top terminal in the left column is labeled '0' and the bottom one is labeled '1'. The top terminal in the right column is labeled 'GROUND' and the bottom one is labeled 'POWER'.

VECTOR D.I.P. PLUGBORD
PATTERN .042" x 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



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BINGHAMTON, N.Y.
8/77 R.B.
PAGE 4 OF 4

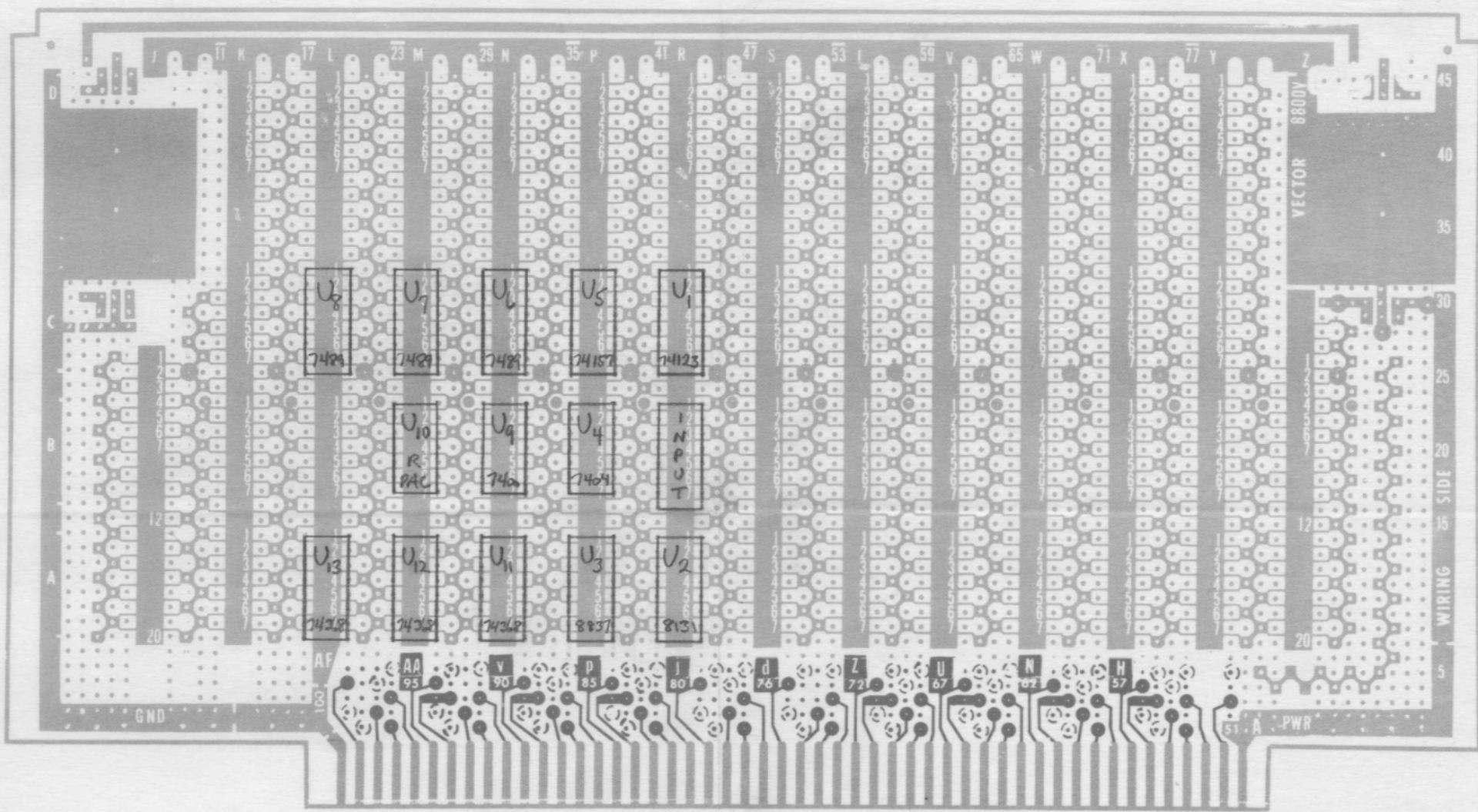
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VECTOR ELECTRONIC CO., INC.
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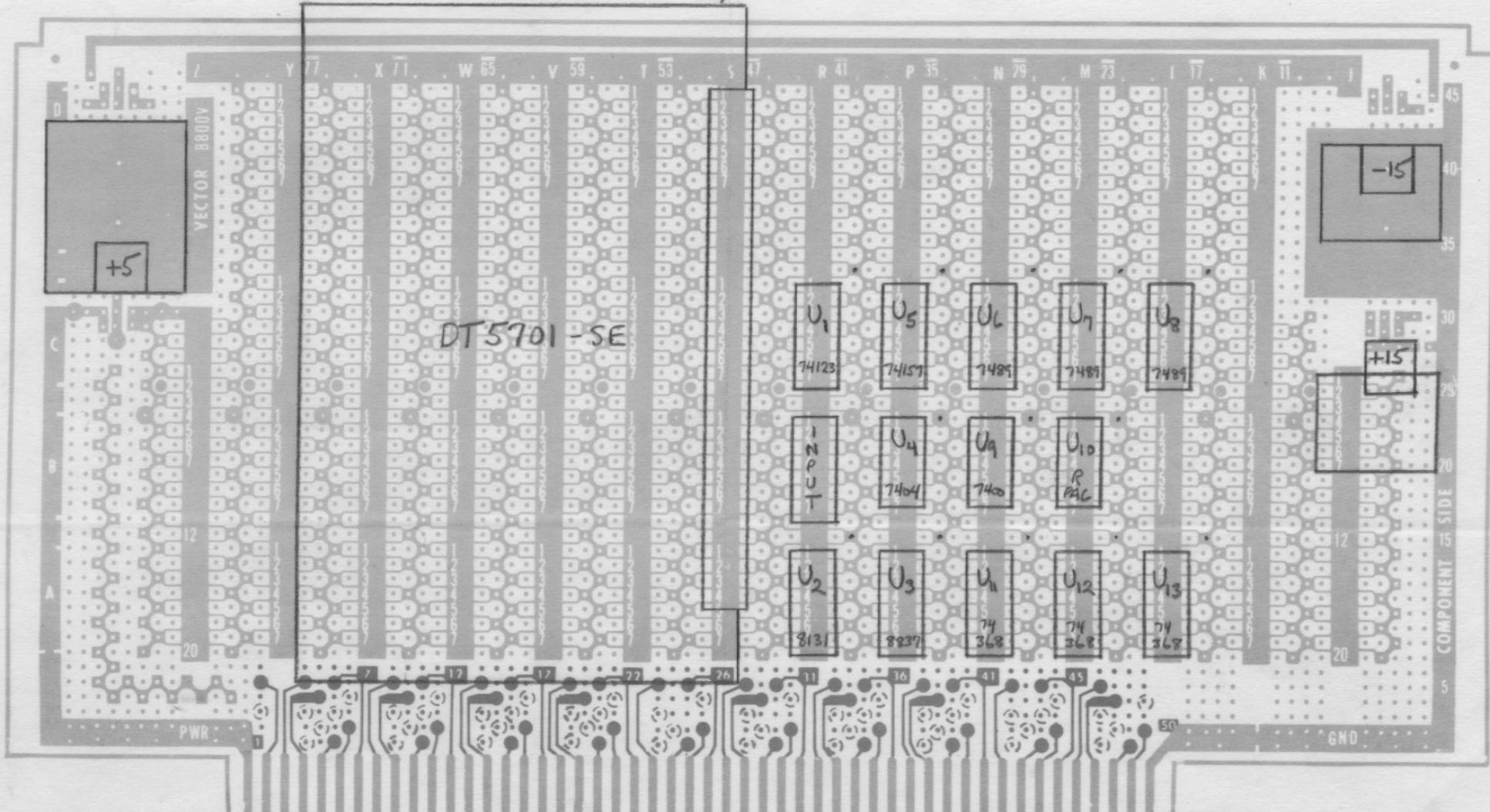


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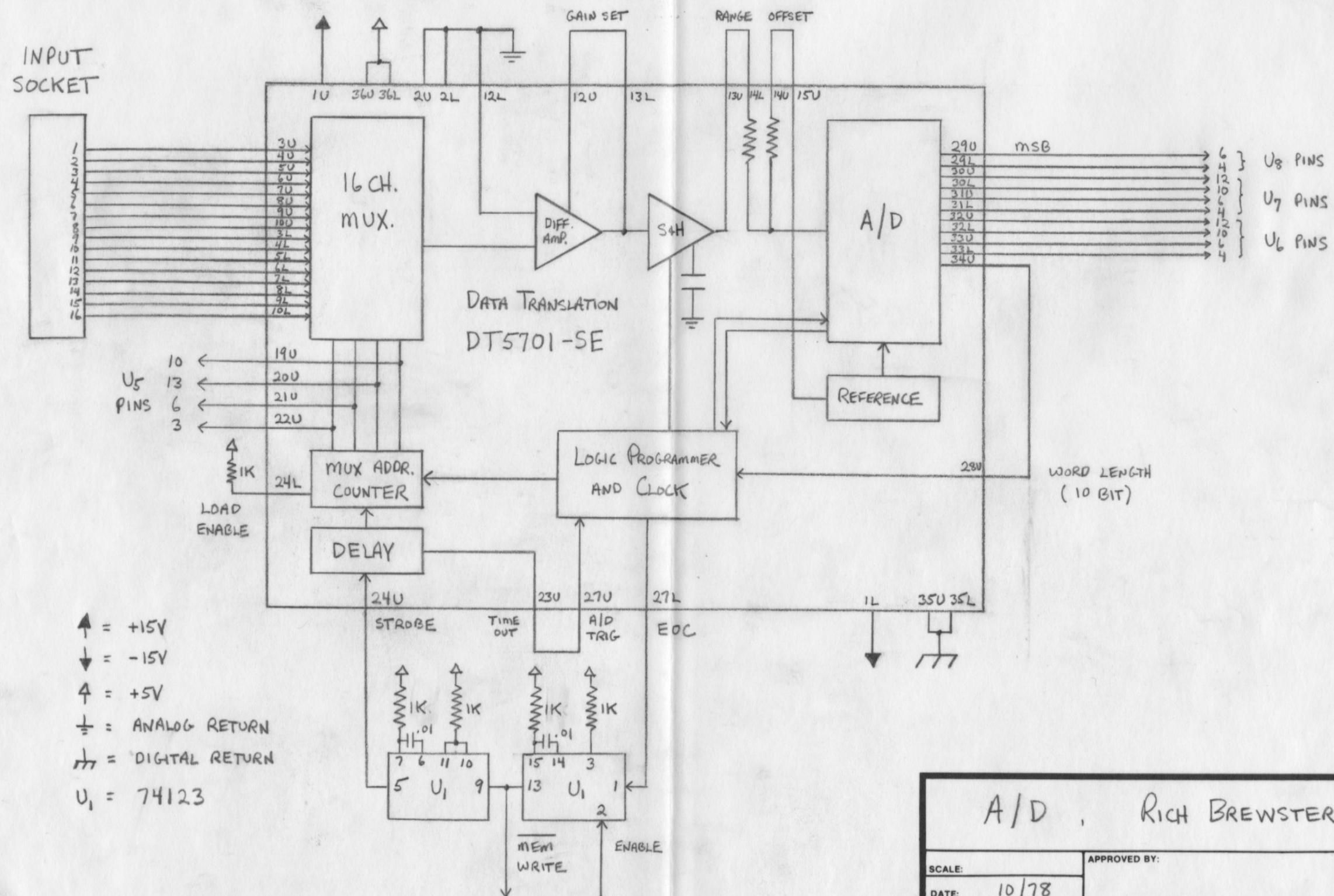


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LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



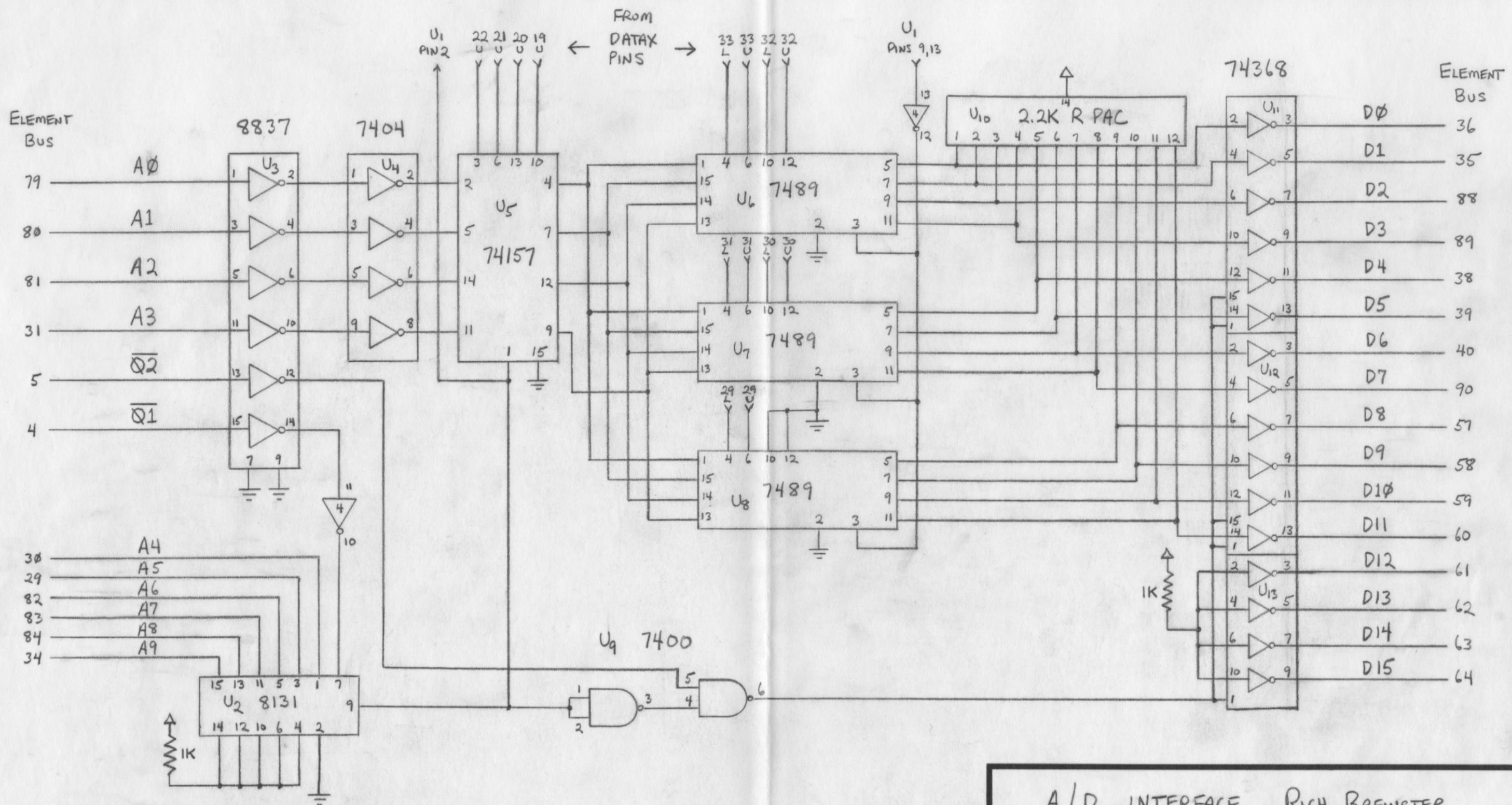
A/D , RICH BREWSTER

SCALE:	APPROVED BY:	DRAWN BY R.B.
DATE: 10/78		REVISED

EXPERIMENTAL TV CENTER, LTD.

BINGHAMTON, N.Y.

DRAWING NUMBER 1 OF 2



1 1 1 1 0 1 1 1 1 0 X X X X 0

A/D ADDRESSES

173700 TO
173736

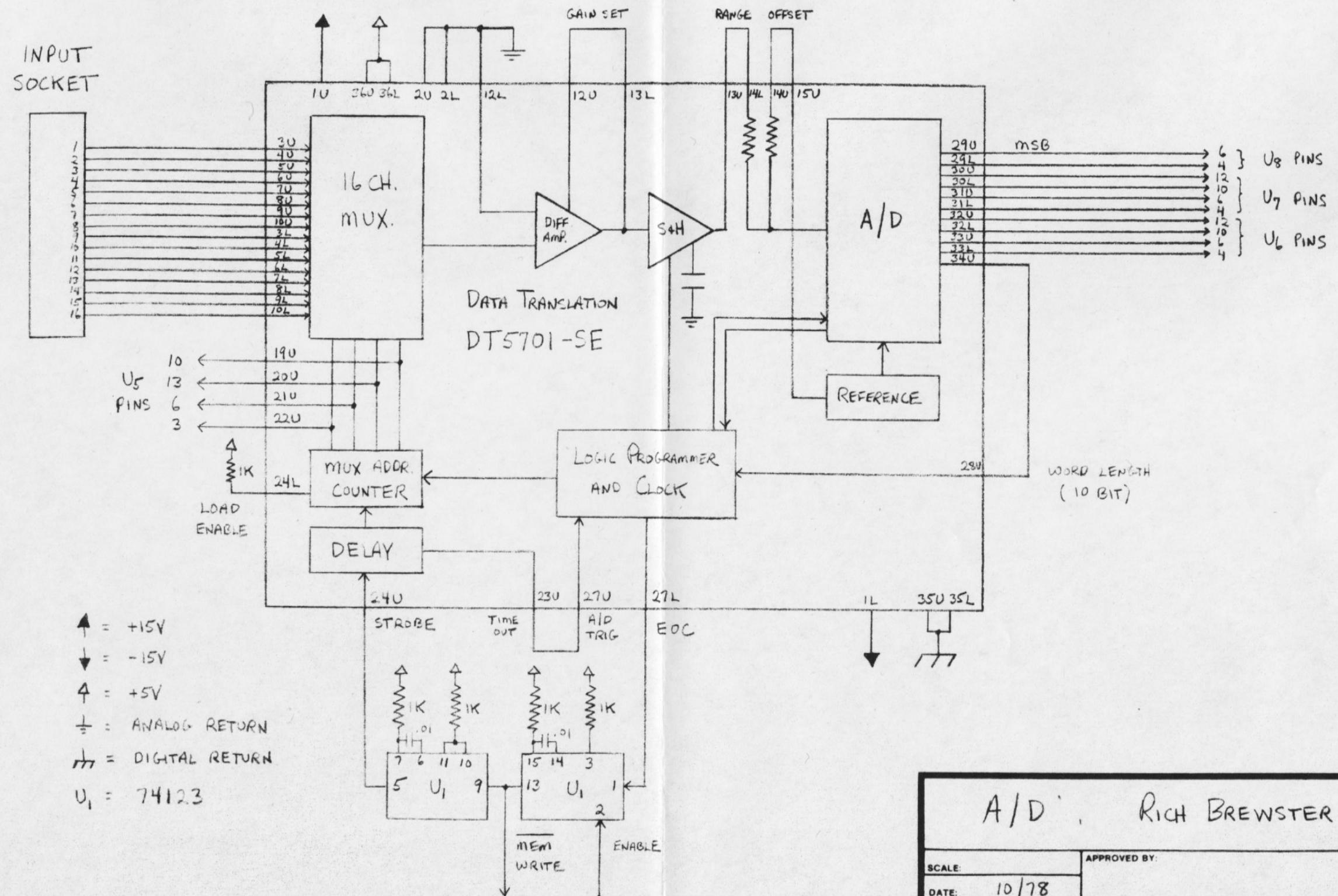
A/D, INTERFACE, RICH BREWSTER

SCALE:	APPROVED BY:	DRAWN BY R.B.
DATE: 10/78		REVISED

EXPERIMENTAL TV CENTER, LTD.

BINGHAMTON, N.Y.

DRAWING NUMBER
2 OF 2



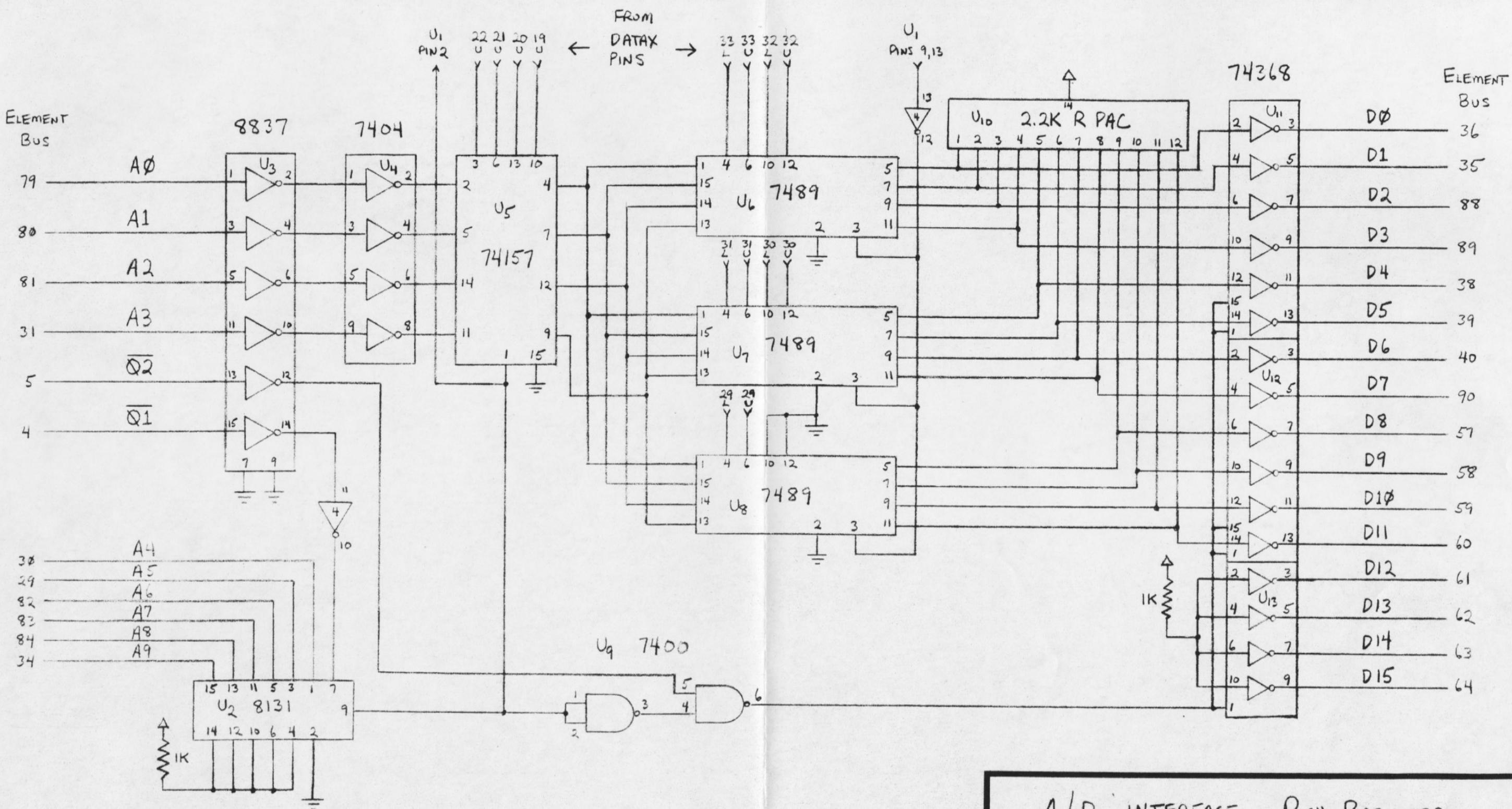
A/D, RICH BREWSTER

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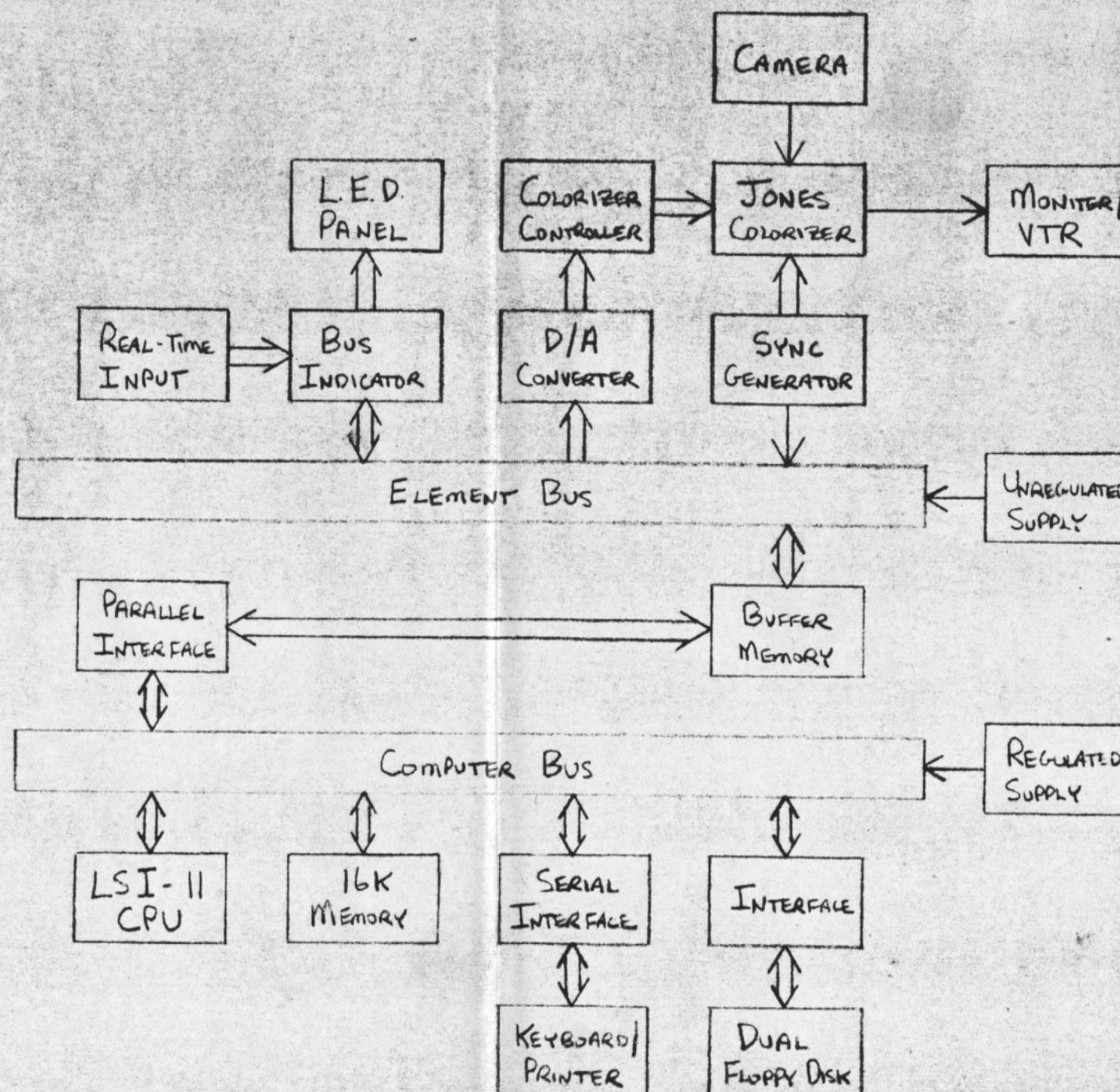
EXPERIMENTAL TV CENTER, LTD.

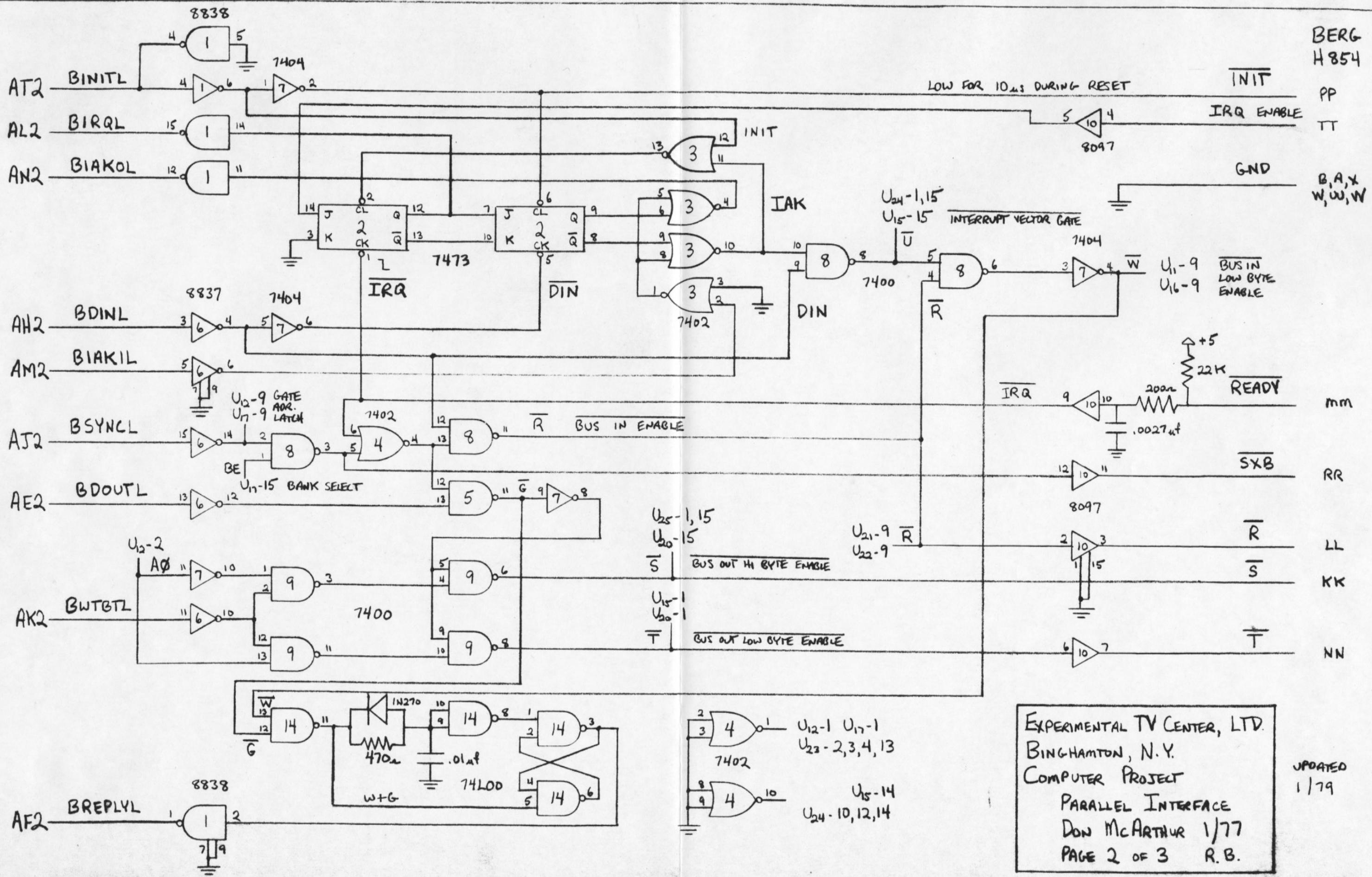
BINGHAMTON, N.Y.

DRAWING NUMBER
1 OF 2

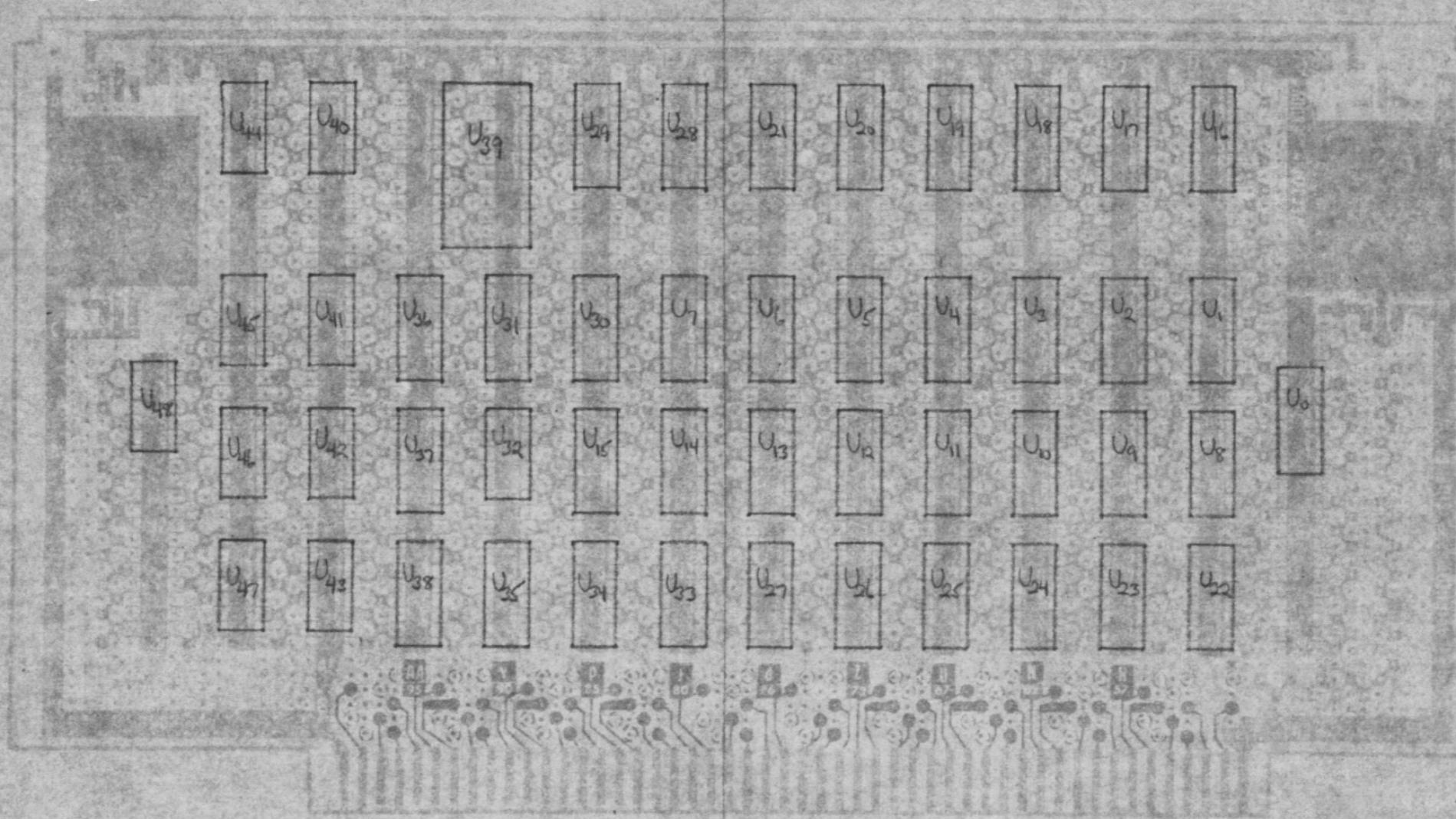


EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y.
 COMPUTER - BASED
 PROCESSING VIDEO SYNTHESIZER
 SYSTEM DIAGRAM, 9/77 R.B.





EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT
PARALLEL INTERFACE
DON McARTHUR 1/77
PAGE 2 OF 3 R.B.



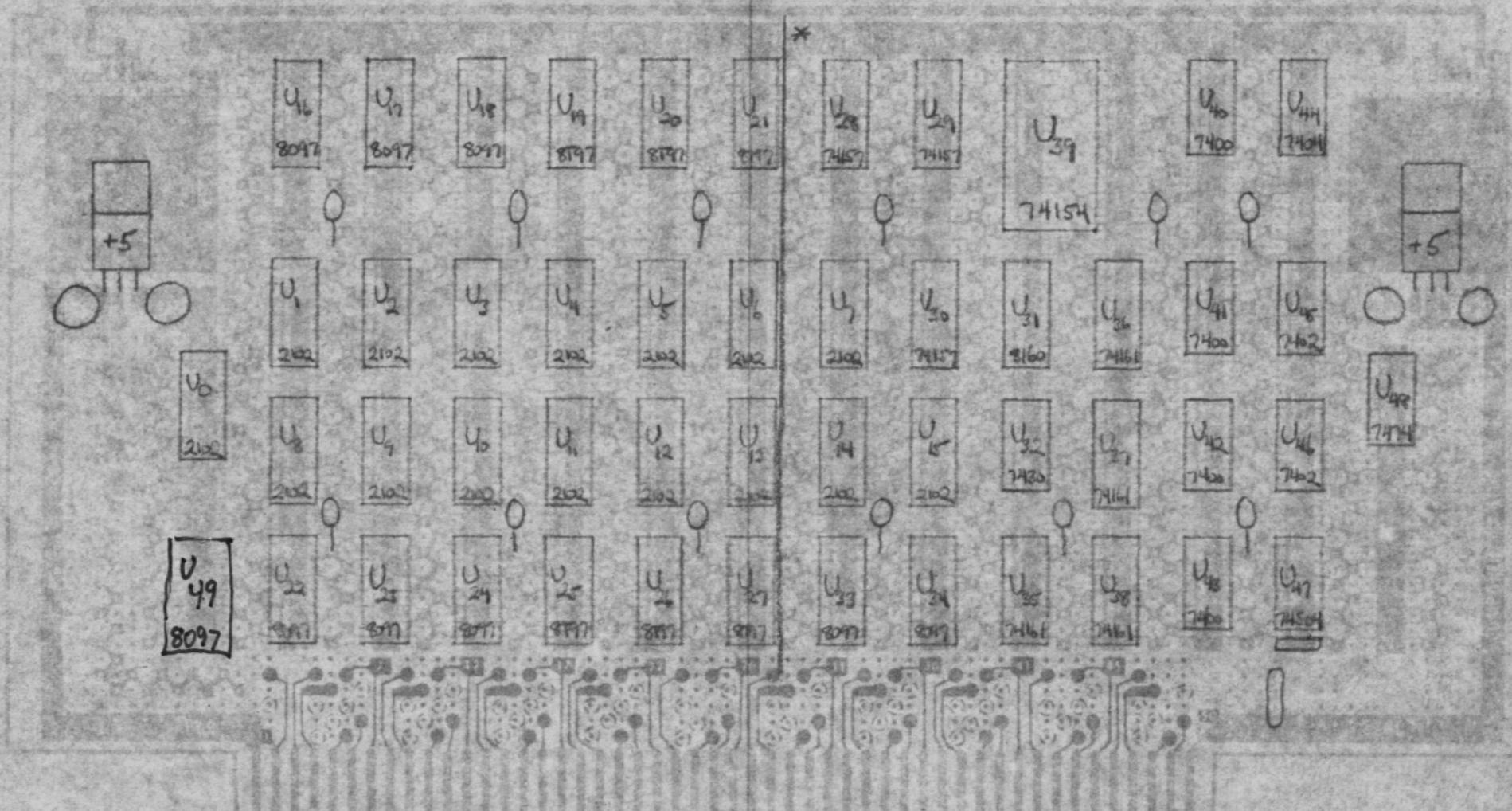
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VECTOR DIP PLUGBOARD
PATTERN .042" X 0.1" SPACED HOLES
L413P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12480 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

BUFFER MEMORY



E.T.C., LTD.
BINGHAMTON, N.Y.
9/77 R.B.
PAGE 3 OF 3

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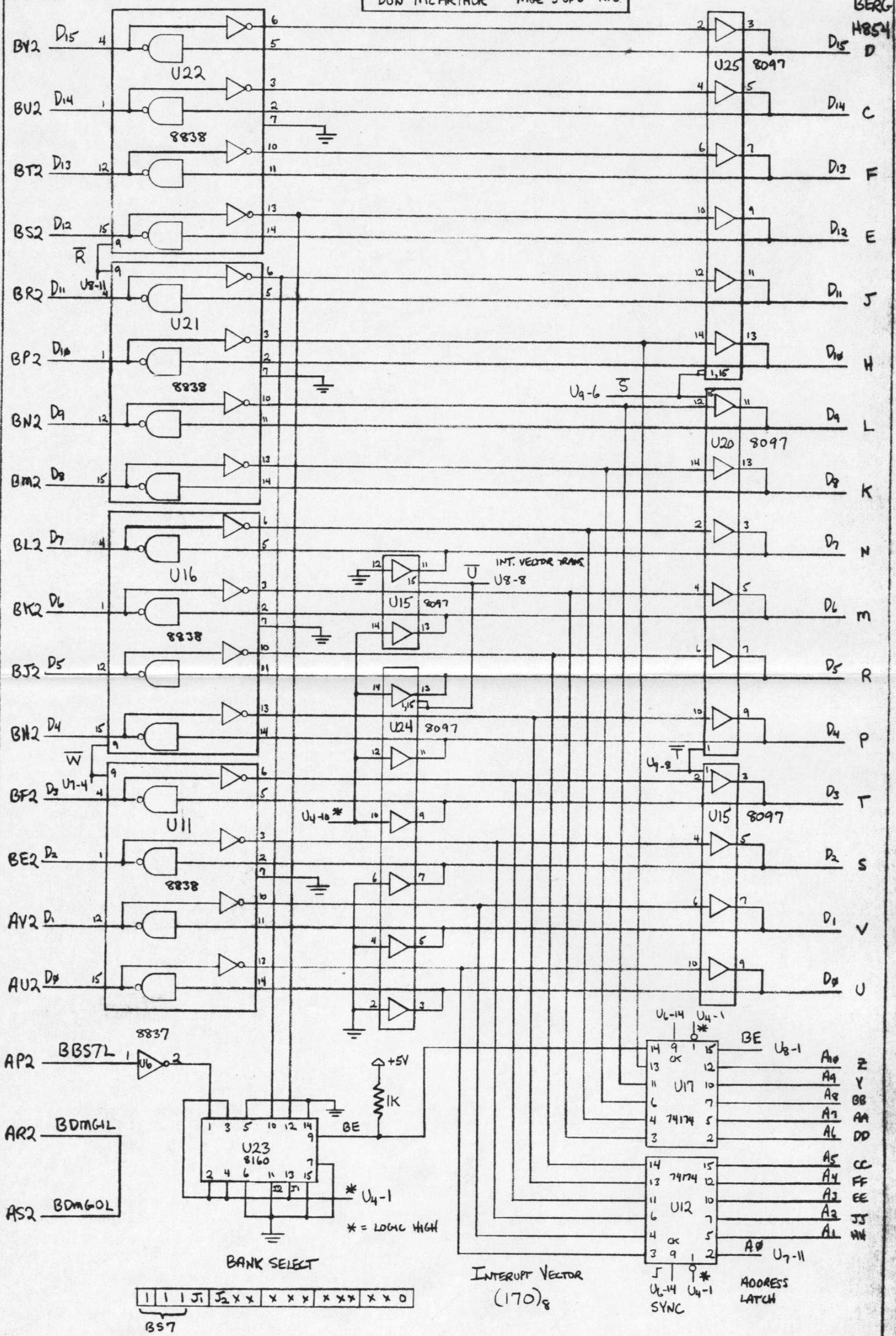
* POWER PLANE CUT TO SEPARATE OUTPUTS* FROM TWO +5V REGULATORS

VECTOR DIP PLUGBOARD
PATTERN .042" X 0.1" SPACED HOLES
L413P1 LAYOUT PAPER

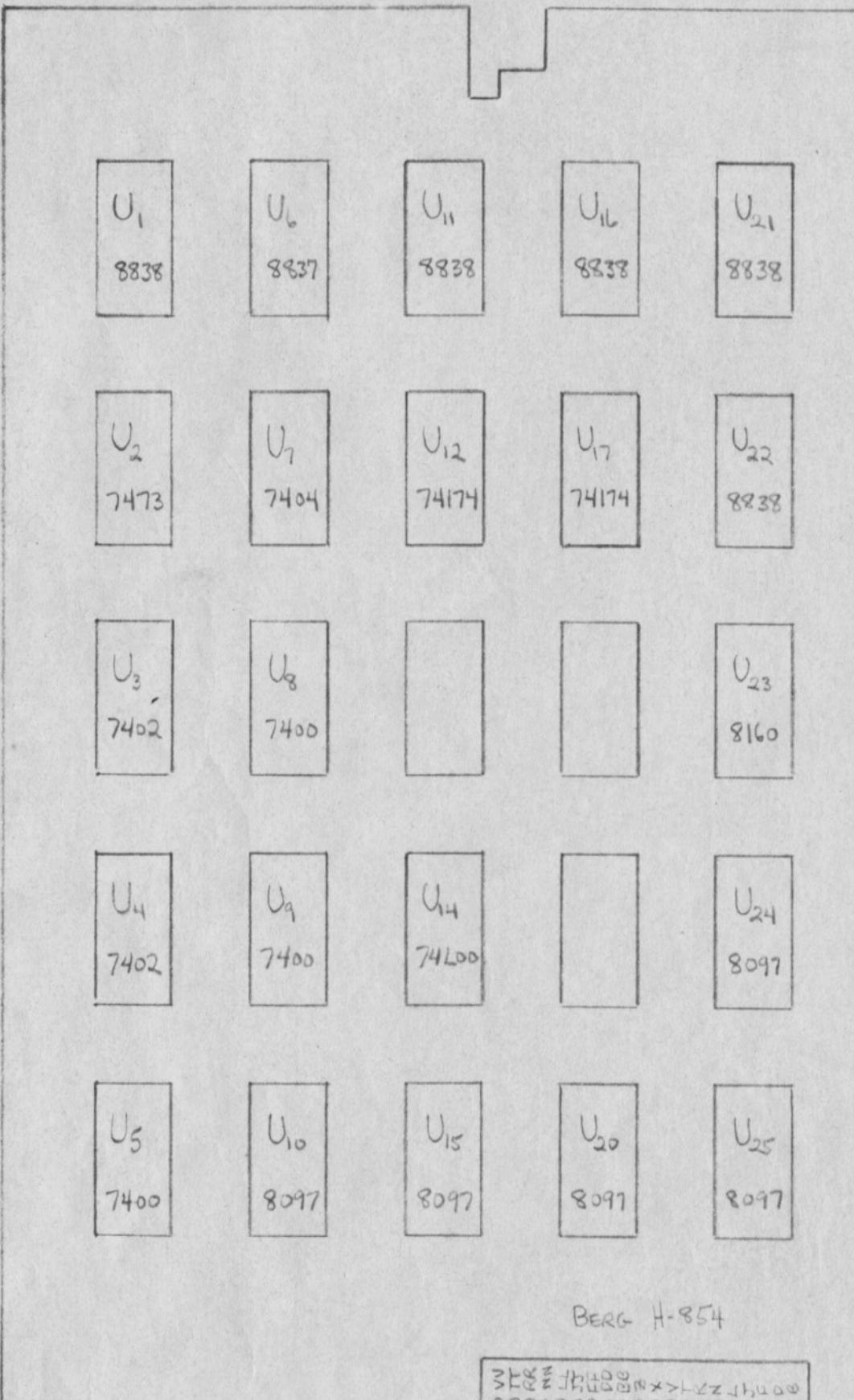
VECTOR ELECTRONIC CO., INC.
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EXPERIMENTAL TV CENTER, LTD.
PARALLEL INTERFACE 1/77
DON McARTHUR PAGE 3 OF 3 R.B.

UPDATED
1/79



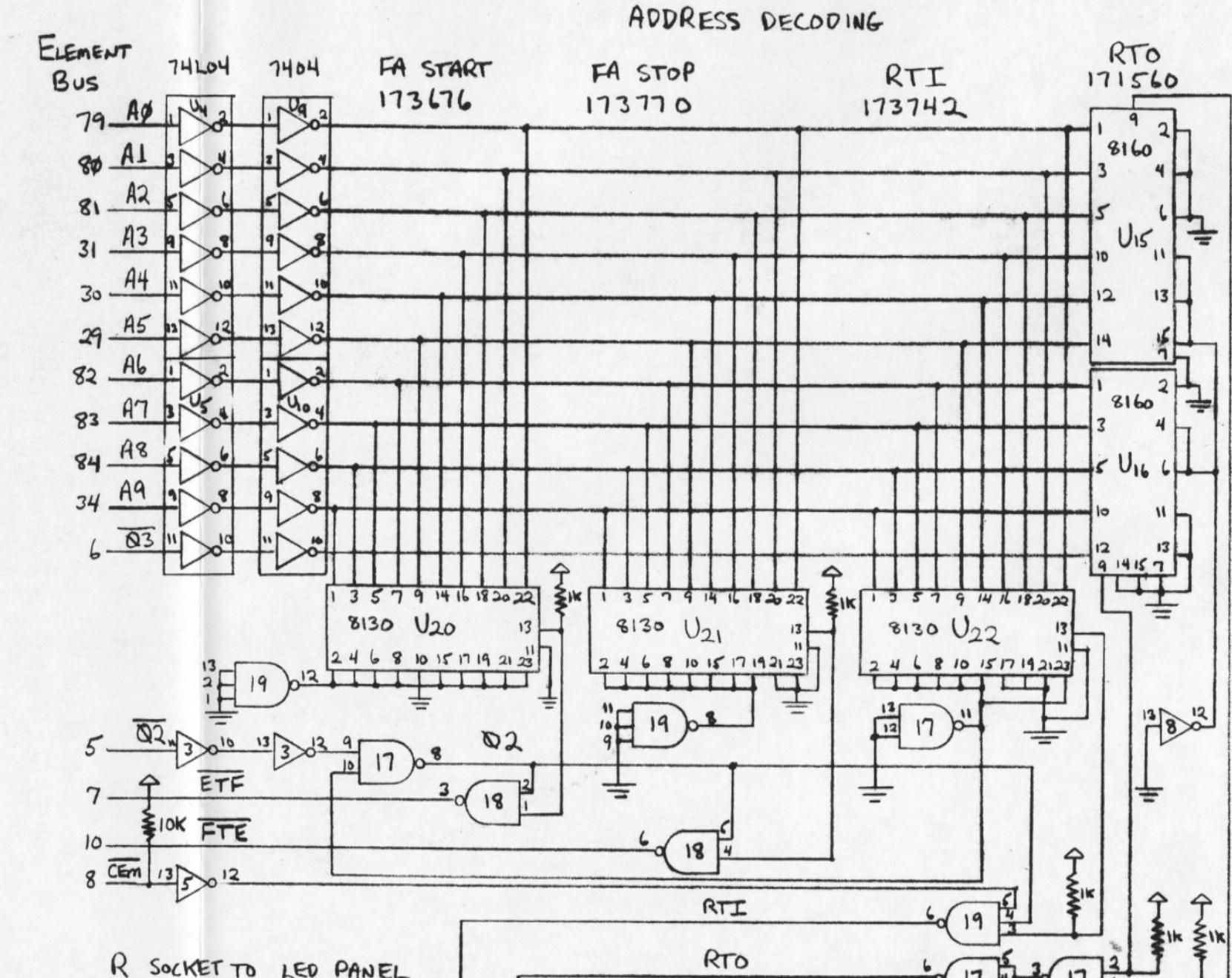
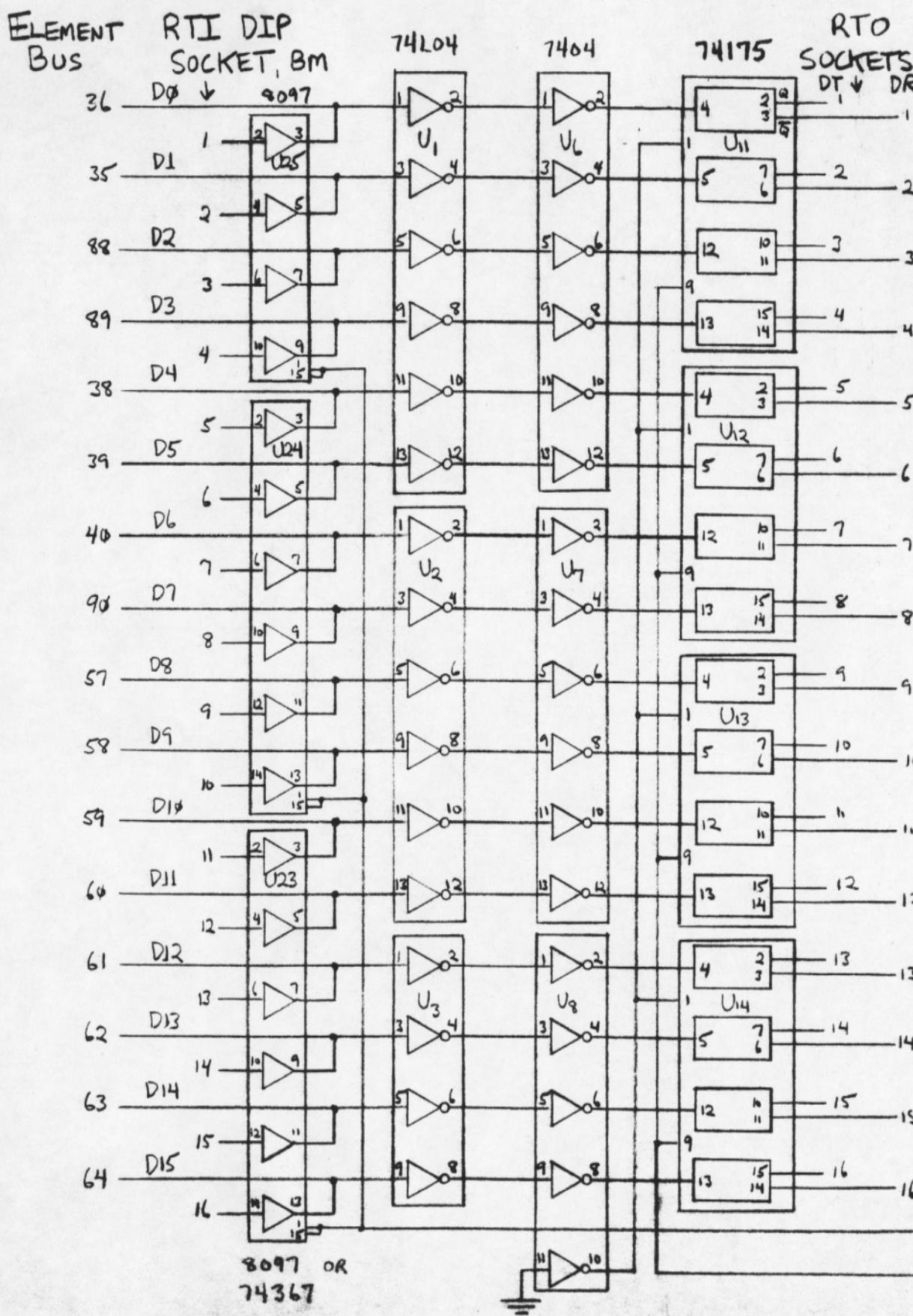
COMPONENT SIDE



PARTS LIST:

QUANTITY	DESCRIPTION	Vcc PIN	Gnd PIN
4	SN7400N QUAD 2-INPUT NAND	14	7
2	SN7402N QUAD 2-INPUT NOR	14	7
1	SN7404N HEX INVERTER	14	7
1	SN7413N DUAL JK MASTER/SLAVE FLIP FLOP	4	11
2	SN74174N HEX D FLIP FLOP WITH CLEAR	16	8
5	DM8097N TRI-STATE HEX BUFFER	16	8
1	DM8160N 6-BIT COMPARATOR	16	8
1	DM8837N HEX UNIFIED BUS RECEIVER	16	8
5	DM8838N QUAD UNIFIED BUS TRANSCIVER	16	8
1	DIGITAL W943 PROTOBOARD		
1	BERG H854 CONNECTOR		
1	IN270 GERMANIUM DIODE		
	200 ohm 1/4 WATT RESISTOR		
	470 ohm " "		
	1K " "		
	22K " "		
	.01uf DISK CAPACITOR		
	.0027uf "		

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT
PARALLEL INTERFACE
DON McARTHUR 1/77
PAGE 1 OF 3 R.B.



R SOCKET TO LED PANEL

T SOCKET TO PARALLEL OUTPUT

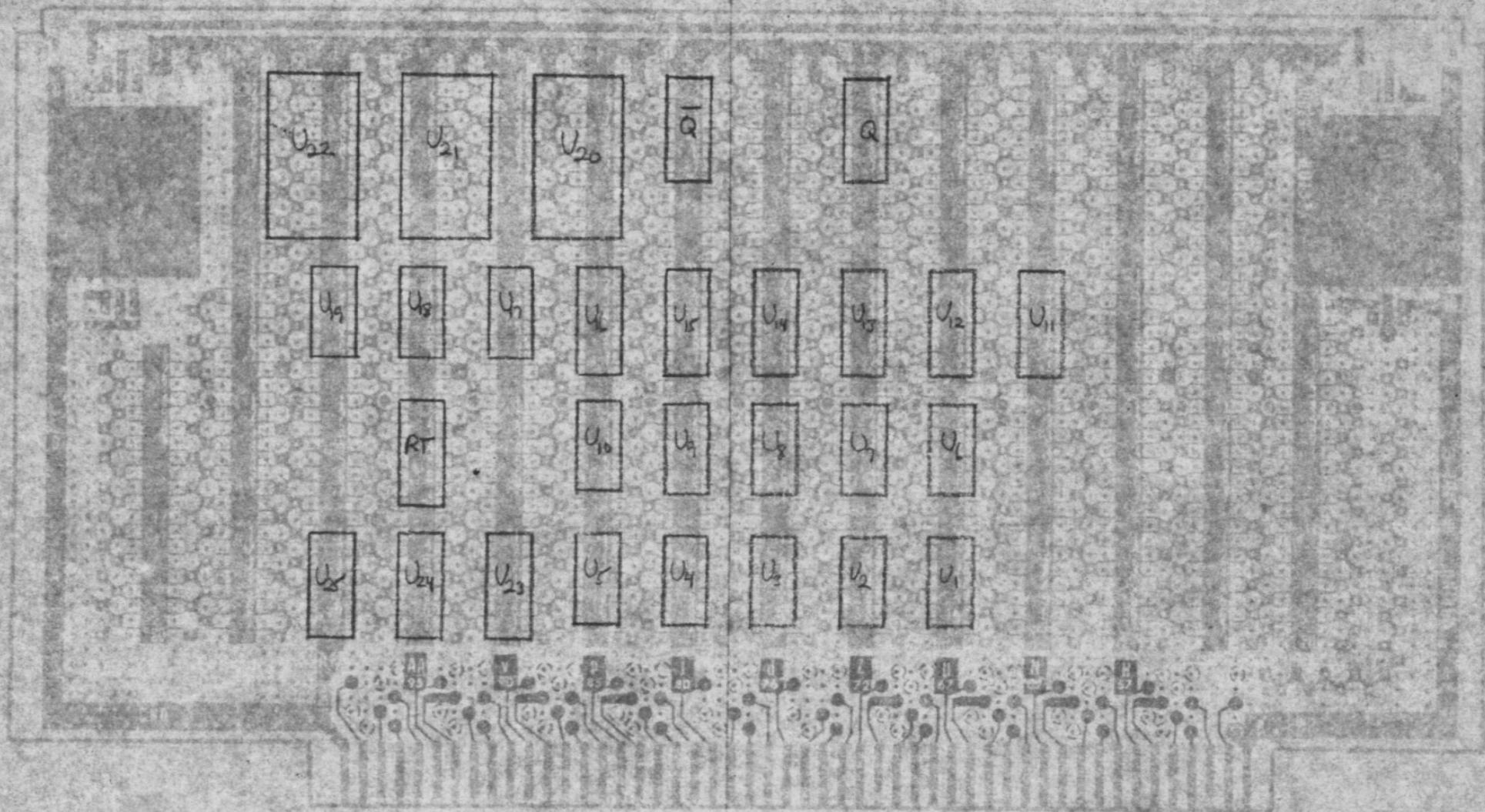
CLIP TERM TO PARALLEL OUTPUT

ORN

$\uparrow = +5VDC$

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT:
BUS INDICATOR BOARD, PAGE 1 OF 3
DON McARTHUR 8/77 R.B.
UPDATED 12/78 - R.B.

BUS INDICATOR



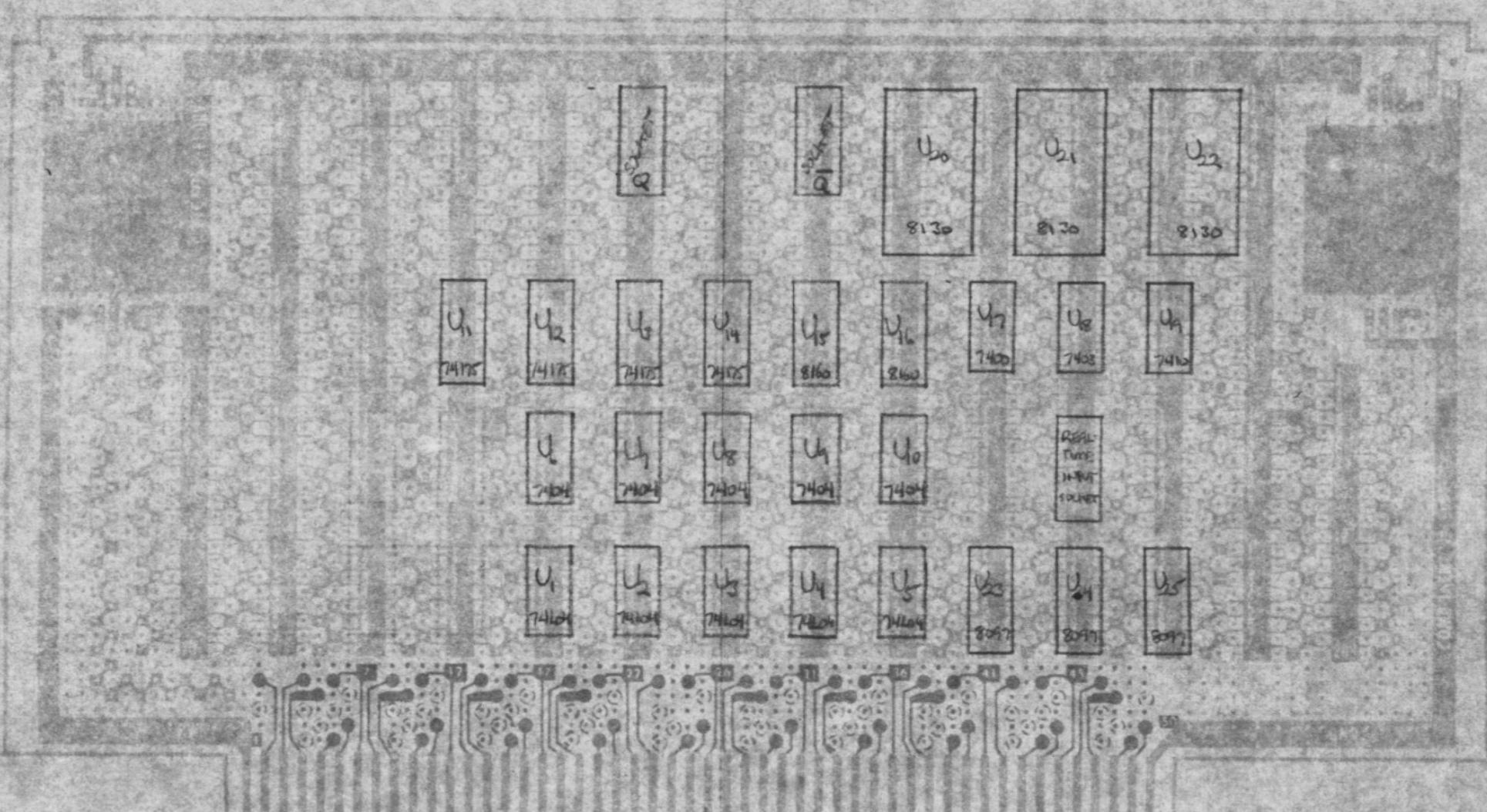
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VECTOR D.I.P. PLUGBOARD
PATTERN .042" X 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

BUS INDICATOR



E.T.C., LTD.
BINGHAMTON, N.Y.
8/77 R.B.
PAGE 3 OF 3

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LA13P1 LAYOUT PAPER

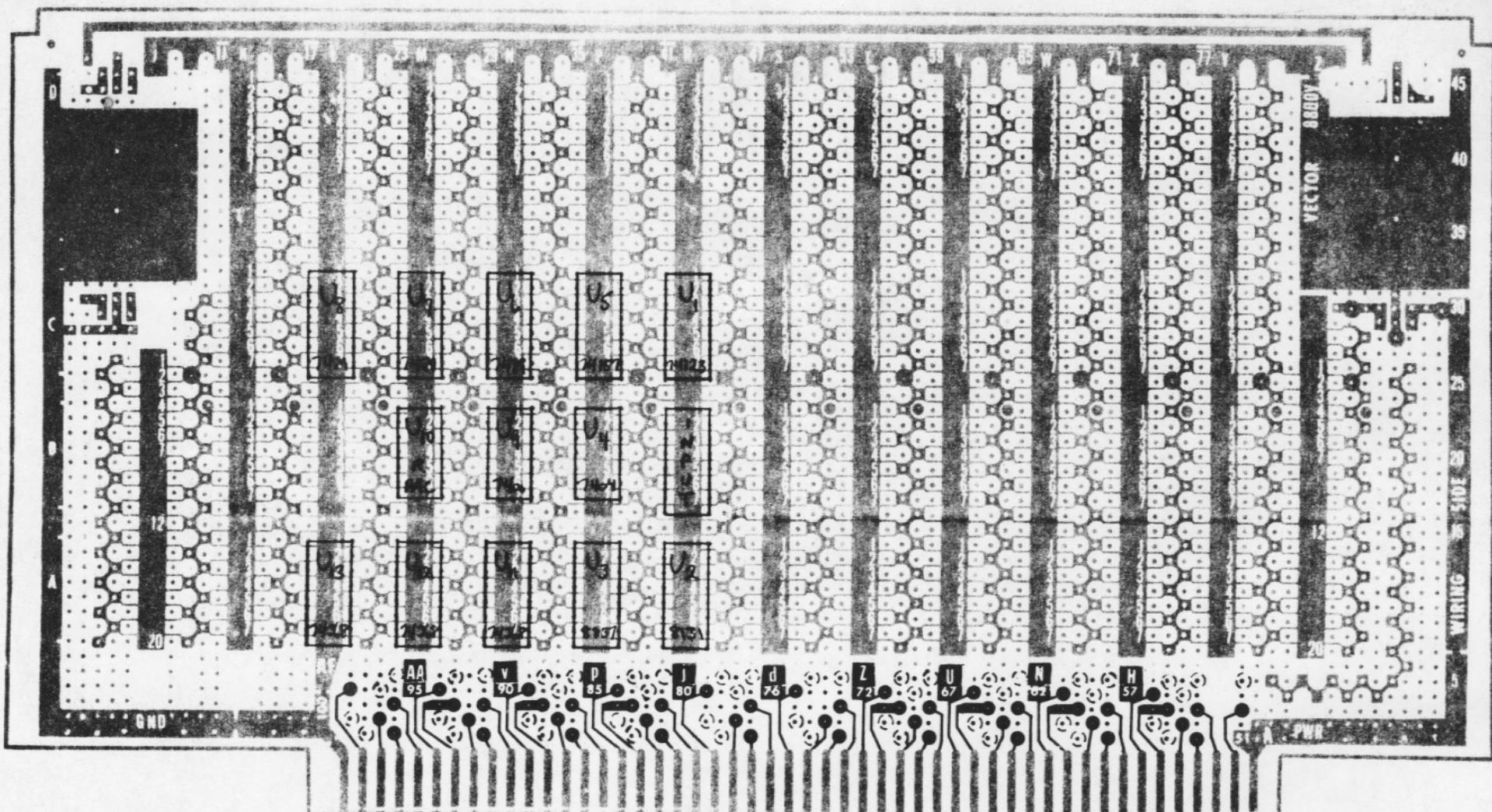
VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

LA13P2

FOR 8800V SERIES MICROPROCESSOR BOARD

WIRING SIDE

A/D



NOTES:

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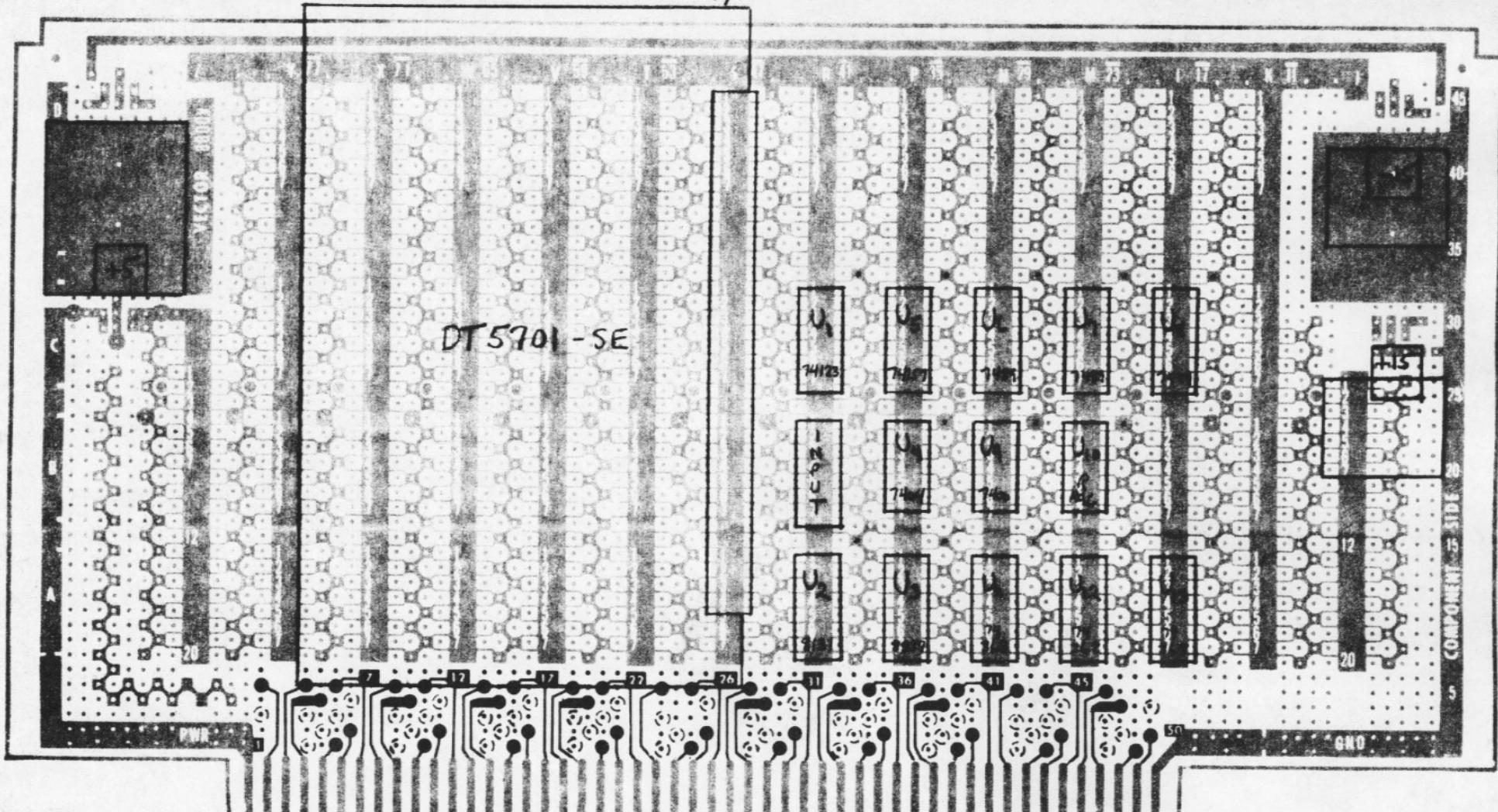
VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

LA13P1

FOR 8800V SERIES MICROPROCESSOR BOARD

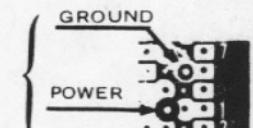
COMPONENT SIDE

A/D



NOTES:

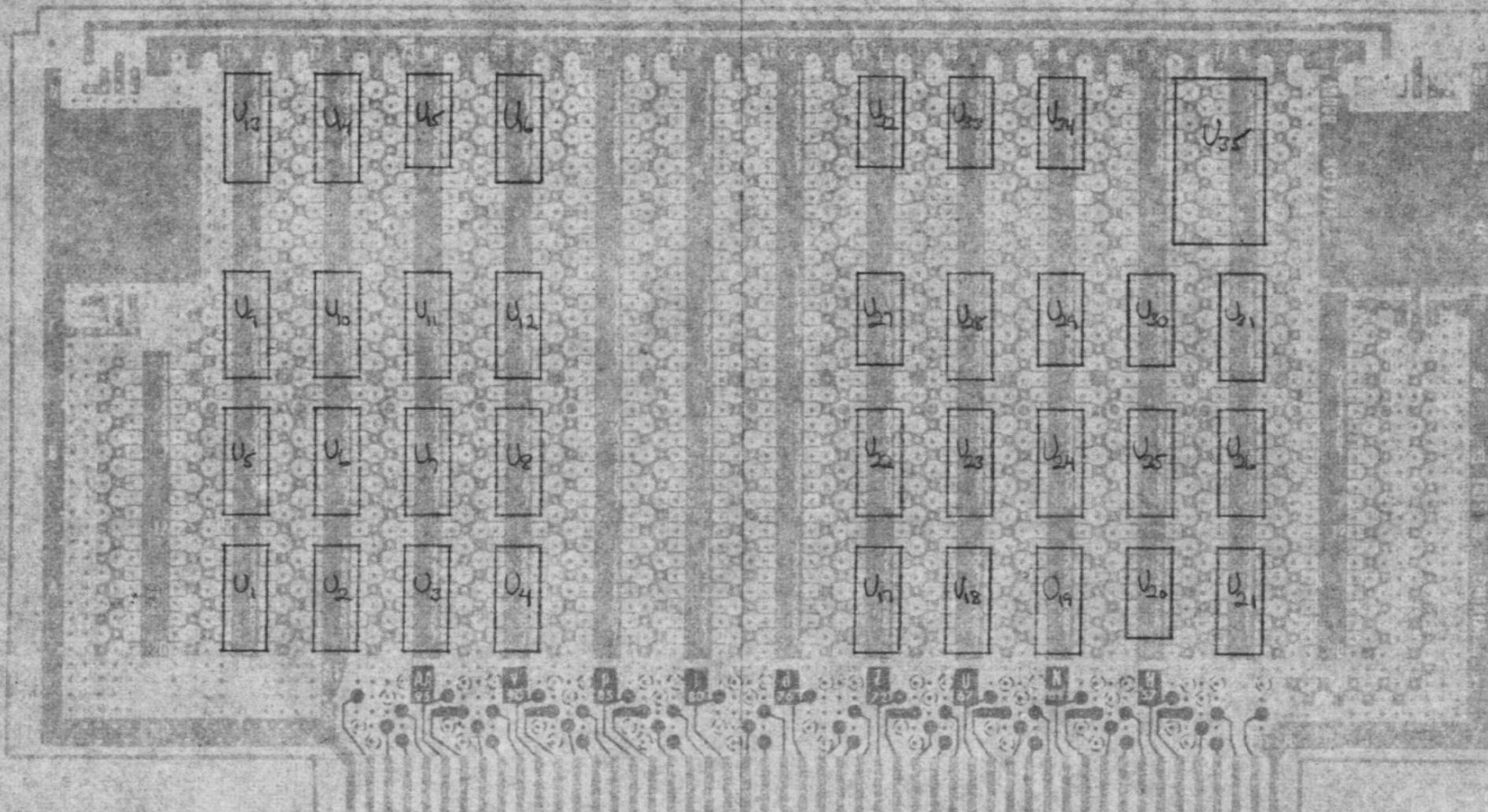
5. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND LEFT SIDE REGULATOR POSITION.
4. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE
3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD
2. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS
1. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS



VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

D 4



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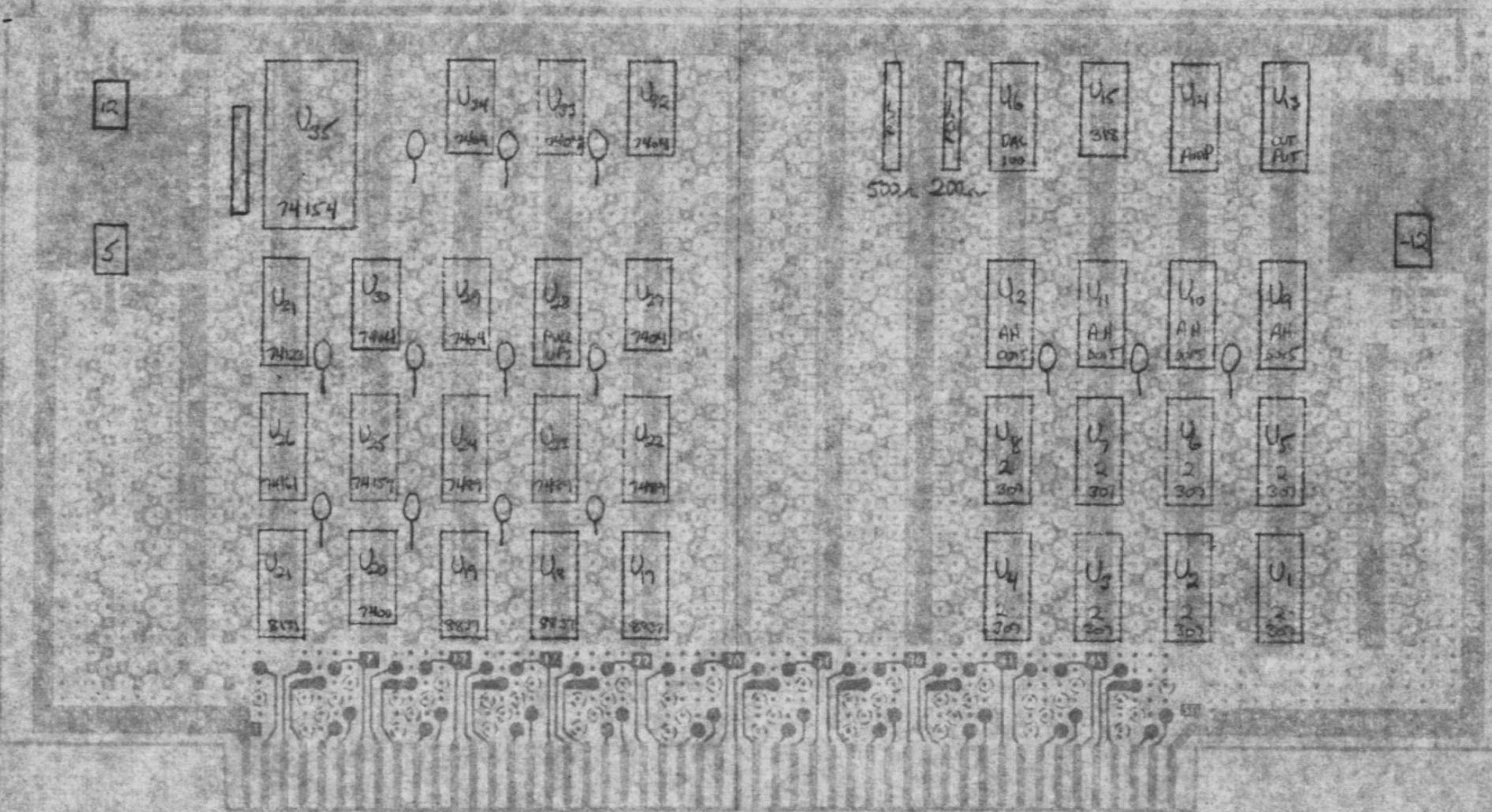
NOTES:

1. RECOMMENDED LOCATION FOR T464 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND
RIGHT SIDE REGULATOR POSITION.
2. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE.
3. DASHED CIRCLES REPRESENT CONNECTED CONTACT PADS ON OPPOSITE SIDE OF BOARD.
4. DIPS WITH 3/8" SPAN MOUNT OVER SOLID BUS COLUMNS.
5. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATOR.

VECTOR D.I.P. PLUGBOARD
PATTERN .042" X .01" SPACED HOLES
16-3001 500LT PAPER

VECTOR ELECTRONIC CO., INC.
12480 GLADSTONE AVE.
SUITE 140-B, CALIFORNIA 91382

P.1A



E.T.C., LTD.
BINGHAMTON, N.Y.
8/77 R.B.
PAGE 4 OF 4

111

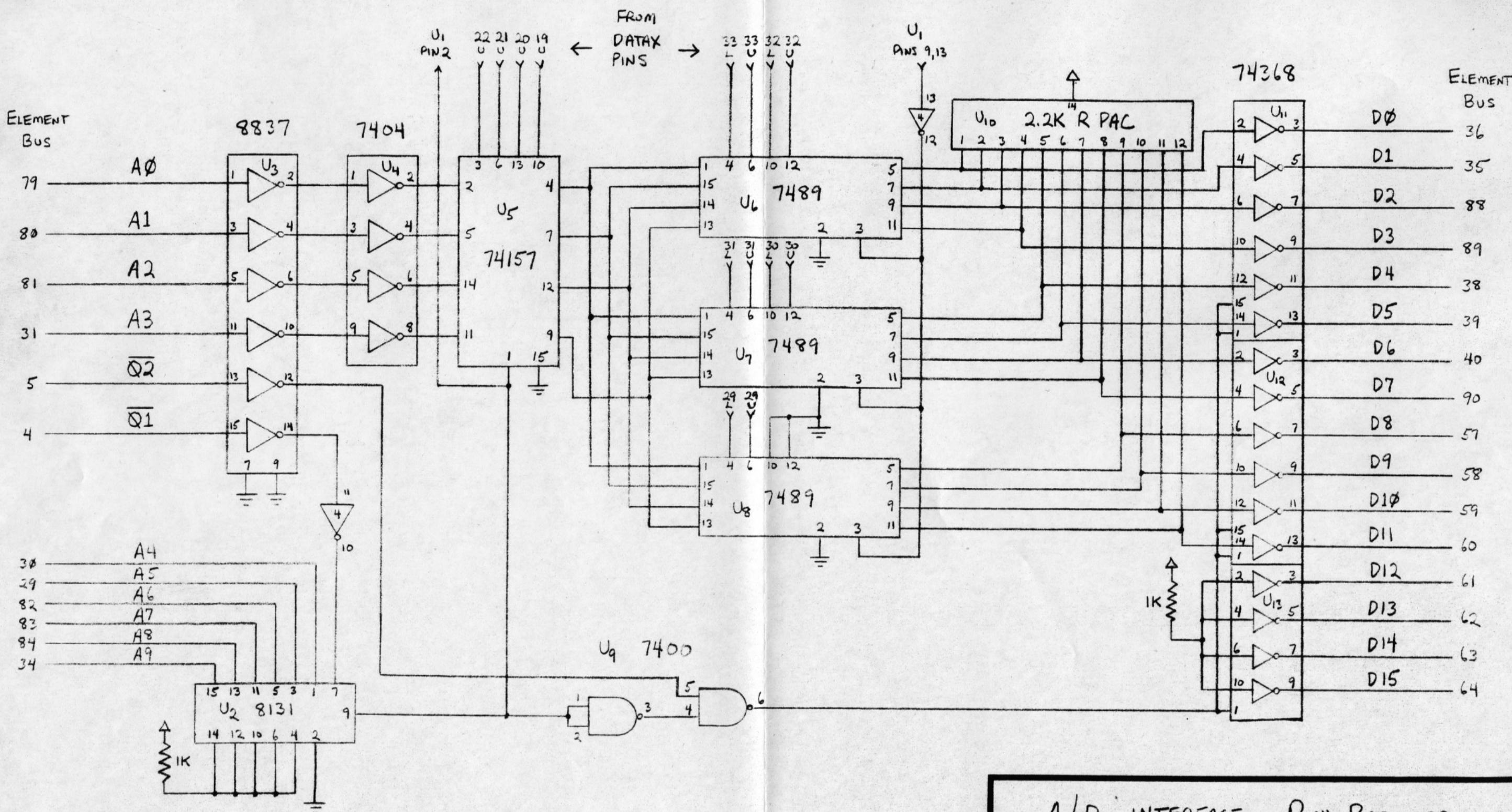
NOTES:

- 5. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND LEFT SIDE REGULATOR POSITION.
- 4. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE.
- 3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD.
- 2. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS.
- 1. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z IN TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS.

GROUND
POWER

VECTOR D/F PLUGBOARD
PATTERN .042" X .01" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SUITE 100, LAUREL, MARYLAND 20708



1111011110XX*0

A/D ADDRESSES

173700 TO

173736

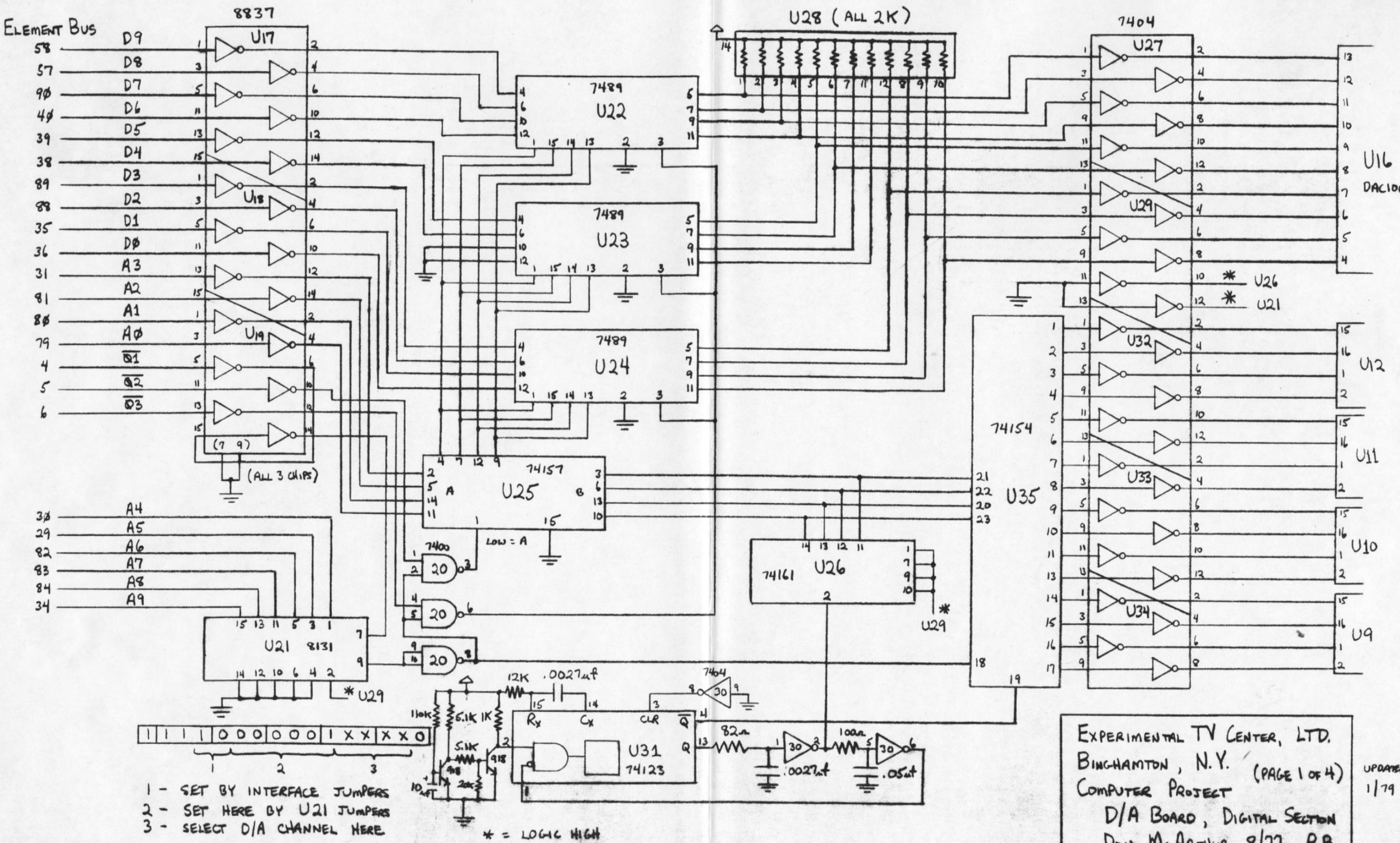
A/D, INTERFACE, Rich BREWSTER

SCALE:	APPROVED BY:	DRAWN BY R.B.
DATE: 10/78		REVISED

EXPERIMENTAL TV CENTER, LTD.

BINGHAMTON, N.Y.

DRAWING NUMBER 2 OF 2



EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y. (PAGE 1 OF 4)
COMPUTER PROJECT
D/A BOARD, DIGITAL SECTION
DON McARTHUR 8/77 R.B.

UPDATED
1/79

BUFFER MEMORY MAP

ELEMENTS

<u>LOCATION</u>	<u>DEDICATION</u>
170000 }	UNDEDICATED
170036 }	
170040	D/A 1
170042	D/A 2
170044	D/A 3
170046	D/A 4
170050	D/A 5
170052	D/A 6
170054	D/A 7
170056	D/A 8
170060	D/A 9
170062	D/A 10
170064	D/A 11
170066	D/A 12
170070	D/A 13
170072	D/A 14
170074	D/A 15
170076	D/A 16
170100 }	UNDEDICATED
171556 }	REAL TIME OUTPUT
171560	
171562 }	UNDEDICATED
173674 }	

FEATURES

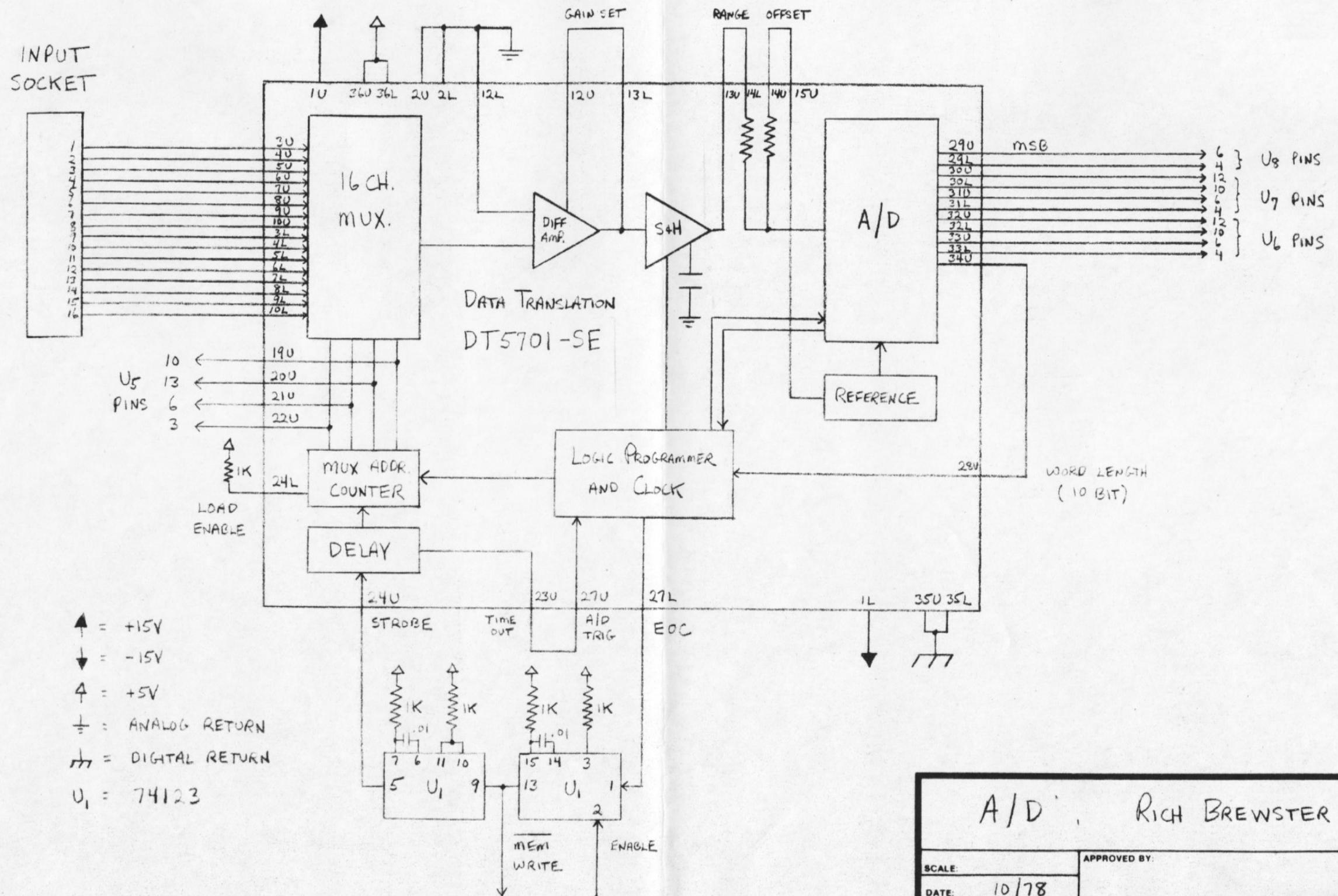
<u>LOCATION</u>	<u>DEDICATION</u>
173676	FEATURE AREA START
173700	A/D 1
173702	A/D 2
173704	A/D 3
173706	A/D 4
173710	A/D 5
173712	A/D 6
173714	A/D 7
173716	A/D 8
173720	A/D 9
173722	A/D 10
173724	A/D 11
173726	A/D 12
173730	A/D 13
173732	A/D 14
173734	A/D 15
173736	A/D 16
173740	UNDEDICATED
173742	REAL TIME INPUT
173744 }	
173766 }	UNDEDICATED
173770	FEATURE AREA STOP
173772	UNDEDICATED
173774	UNDEDICATED
173776	DON STAT REGISTER

EXPERIMENTAL TV CENTER, LTD. BINGHAMTON, N.Y.

SCALE:	APPROVED BY:	DRAWN BY R.B.
DATE: 1/79		REVISED

BUFFER MEMORY MAP

DRAWING NUMBER



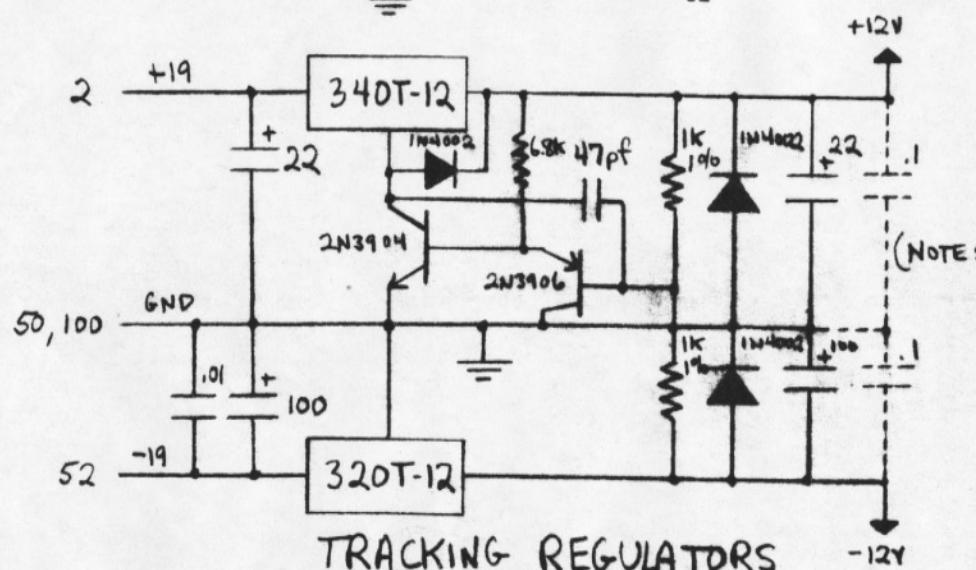
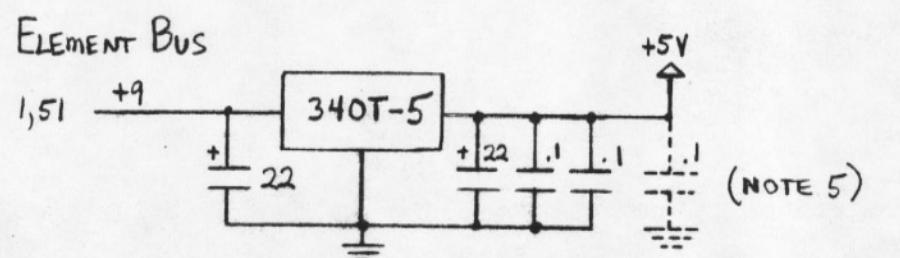
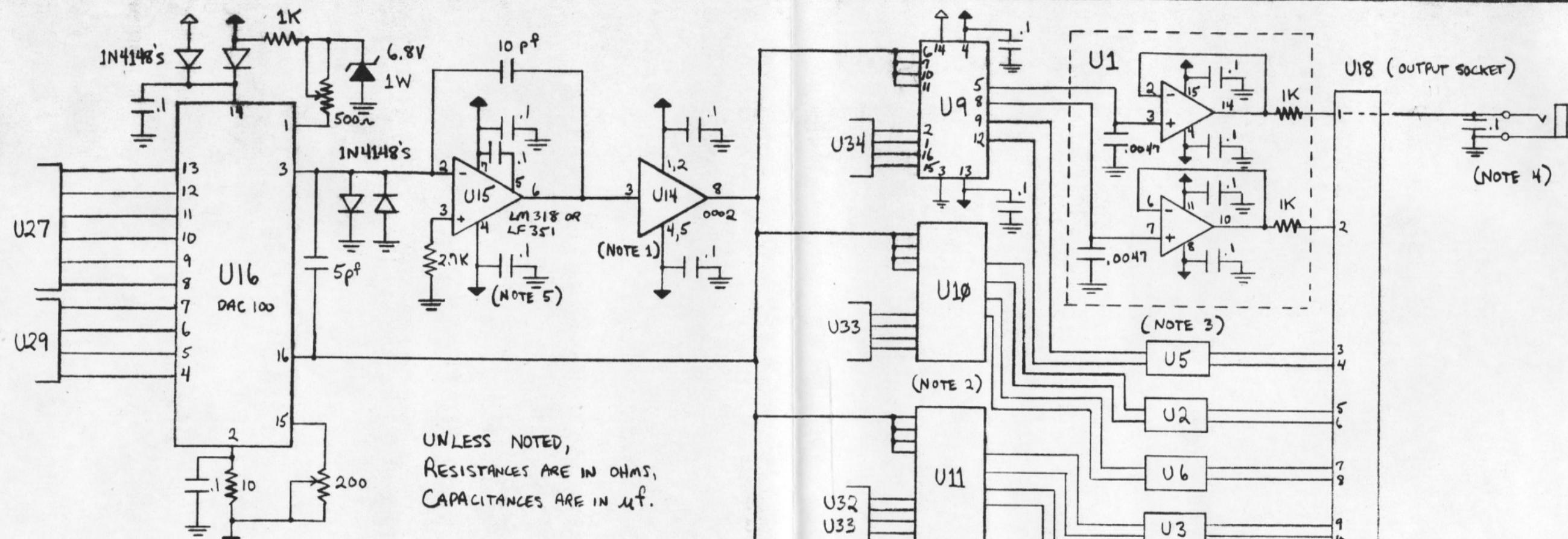
A/D, RICH BREWSTER

SCALE:	APPROVED BY:	DRAWN BY R.B.
DATE: 10/78		REVISED

EXPERIMENTAL TV CENTER, LTD.

BINGHAMTON, N.Y.

DRAWING NUMBER
1 OF 2



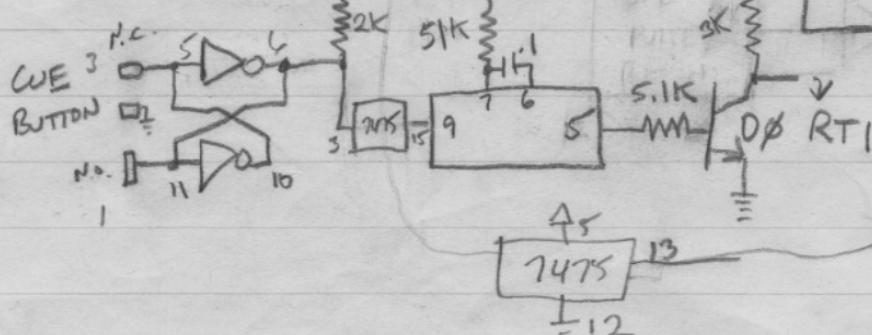
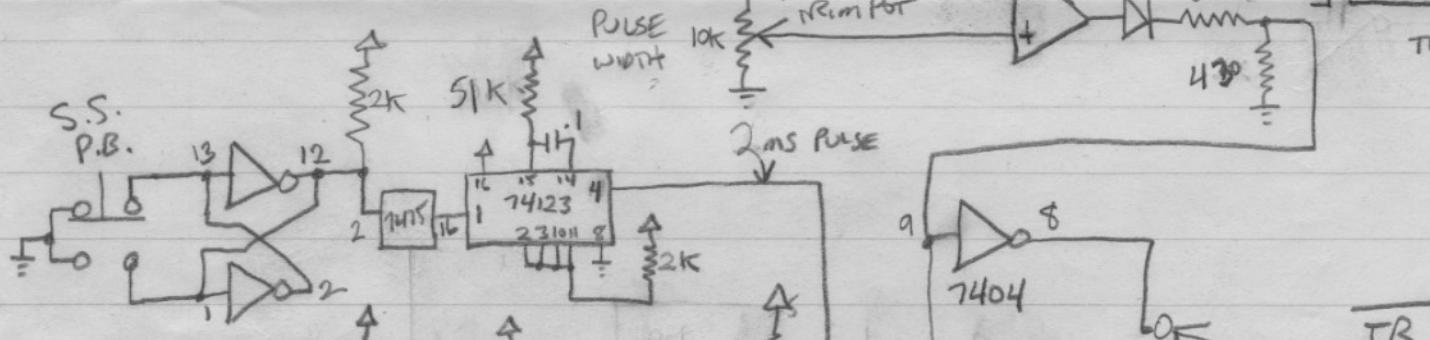
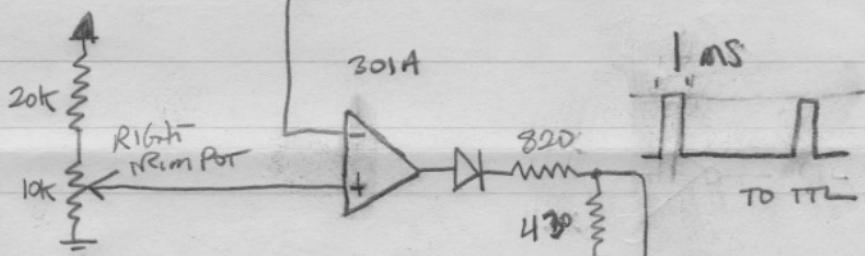
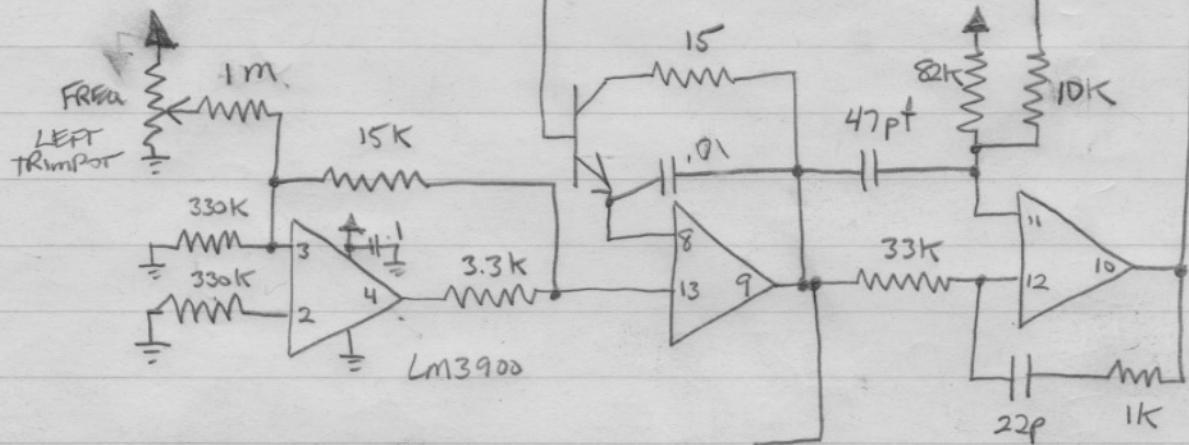
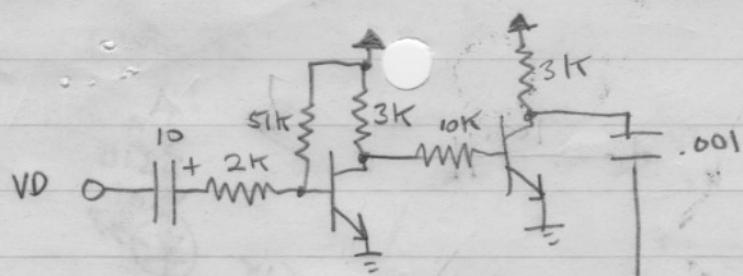
NOTES :

- 1) U14 (LH0002CN) IS A 10-PIN DIP.
- 2) U10-U12 ARE CONFIGURED SIMILARLY TO U9, AH0015.
- 3) U2-U8 ARE CONFIGURED SIMILARLY TO U1, WHICH CONSISTS OF 2 LM307N CHIPS IN ONE 16-PIN SOCKET.
- 4) SEE DESCRIPTION OF D/A OUTPUT PANEL.
- 5) 1μ F TANTALUM CAPACITORS ARE PLACED CLOSE TO POWER SUPPLY PINS OF ALL ANALOG CHIPS.

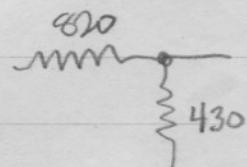
EXPERIMENTAL TV CENTER, LTD
BINGHAMTON, N.Y.
COMPUTER PROJECT
D/A BOARD (PAGE 2 OF 4)
ANALOG SECTION
DON McARTHUR 8/77 R.B.

UPDATED 1/79

TR
CLOCK,
CUE

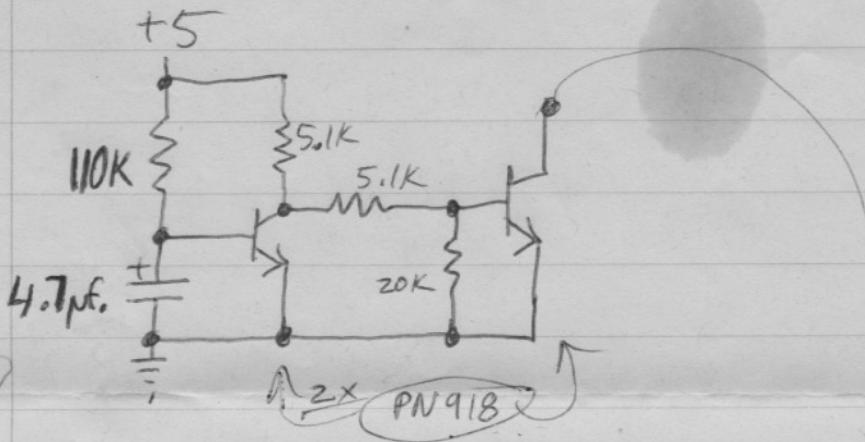


SIMPLE
STEP
(upper mysterious
switch)

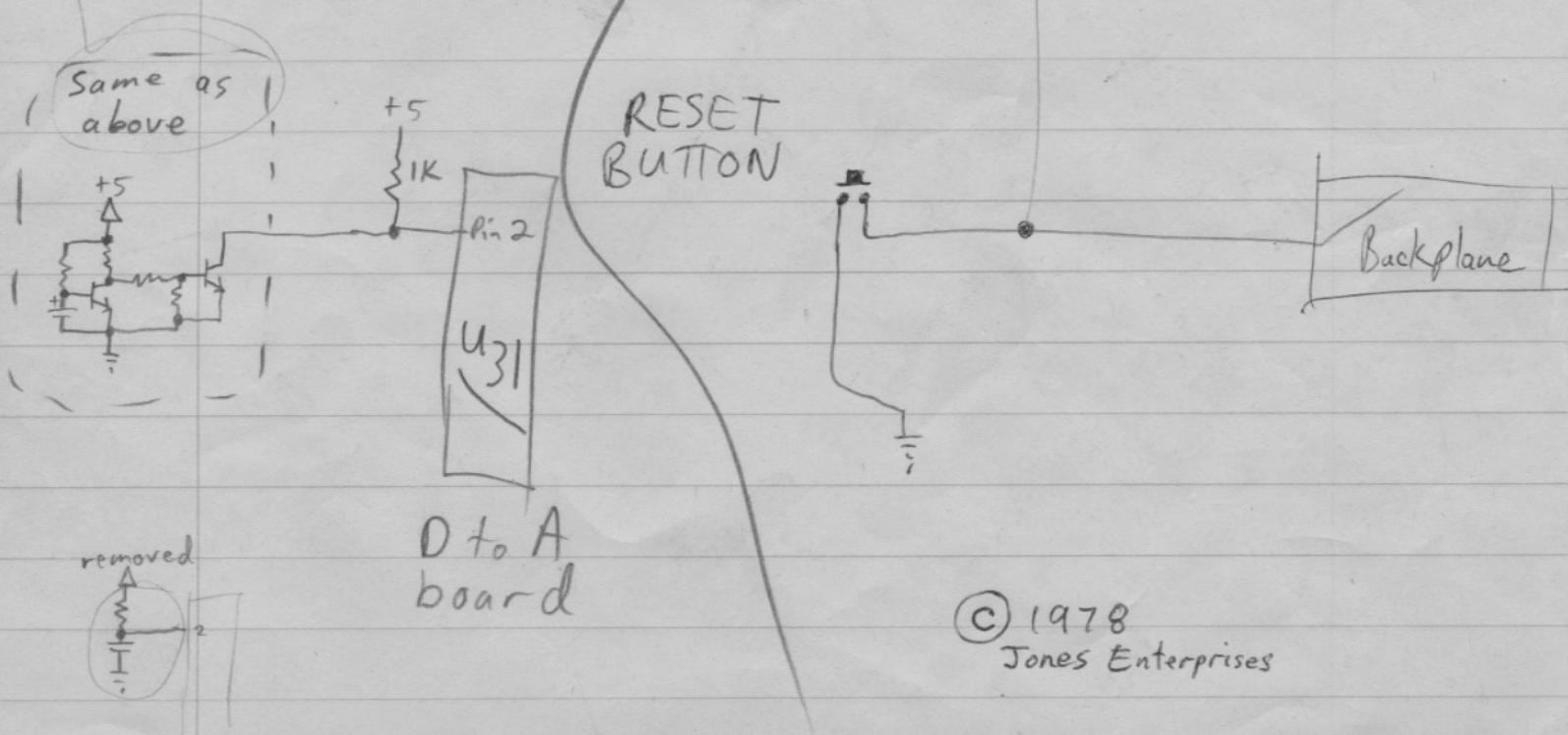


ADDED TO Computer

Power on reset



ALSO

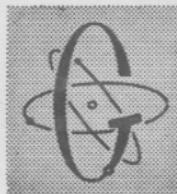


CHANGES

- ✓ 1. DELETED RAW VO FROM BUS PIN 17 (NOW SPARE)
2. \overline{TR} IS NOW GENERATED BY AN OSCILLATOR* WHICH SIMULATES VO AND WILL LOCK TO VO INPUT FROM SYNC GEN. THIS FREES UP OUR SYNC GENERATOR.
- ✓ 3. FEATURE AREA WIDENED TO START AT 173676 TO ACCOMMODATE 16 CHANNEL A/D
4. PIN 14 U_2 OF DON'S INTERFACE BROUGHT OUT AND USED AS AN INTERRUPT REQUEST ENABLE (MANUAL)
5. LED ADDED AT PIN 5 U_{48} BUFFER MEMORY TO INDICATE DON STAT ENABLED
6. 8097 BUFFER ADDED AT \overline{R} (LL), \overline{S} (KK), \overline{T} (NN), AND \overline{SXB} (RR) INPUTS ON BUFFER MEMORY BOARD, 10K PULL-UPS REMOVED.
7. 1K CURRENT LIMITERS ON D/A OUTPUTS MOVED TO DA CARD, CAP. CHANGED TO .01 μ F.
8. Power on reset added to LSI-11 (Jones)
9. Pre-regulation added to all bus supplies with reversed biased diodes for protection.
10. D/A ADDRESSING CORRECTED

* THIS OSCILLATOR MAY BE SELECTED, OR A ONE-SHOT USED TO SINGLE-SCAN THE BUFFER MEMORY BY A PUSHBUTTON FOR TEST AND DEBUG.

Genesee Radio & Parts Co., Inc.



DISTRIBUTORS

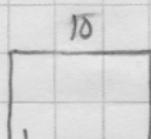
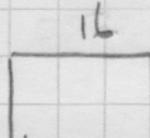
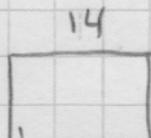
Electronic Components & Equipment

2550 DELAWARE AVENUE BUFFALO, N.Y., 14216

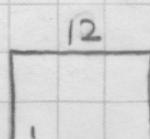
AREA 716
CODE

873-9661

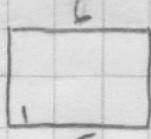
ENTERPRISE 2745



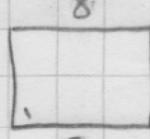
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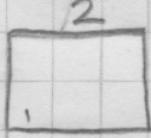
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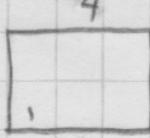
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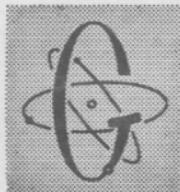


3

A/O MNR BOARD

Our 38th Year of Reliable Service

Genesee Radio & Parts Co., Inc.



◆ DISTRIBUTORS ◆

Electronic Components & Equipment

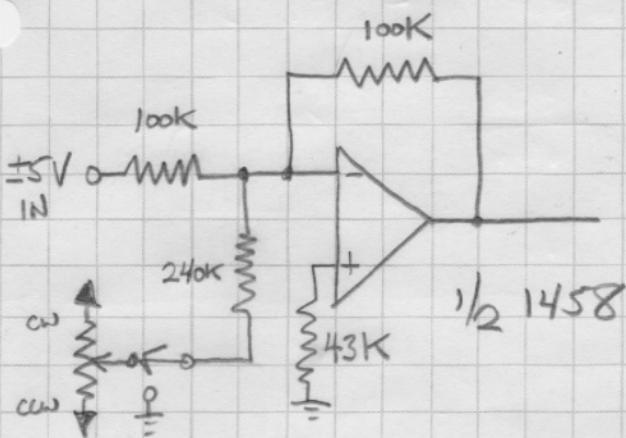
2550 DELAWARE AVENUE BUFFALO, N.Y., 14216

AREA 716
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873-9661

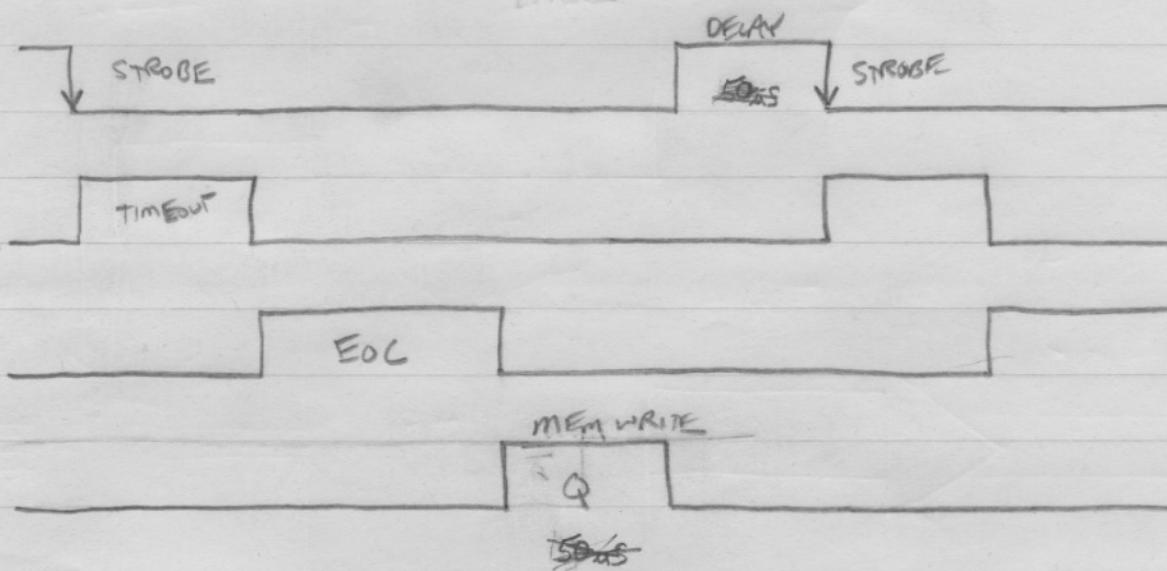
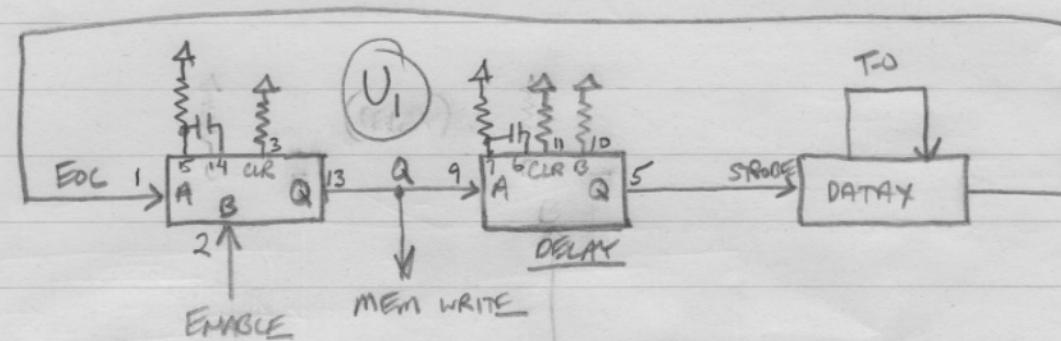
ENTERPRISE 2745

A/D MIXER



Our 38th Year of Reliable Service

A/D CYCLING



ADDRESS COMP

